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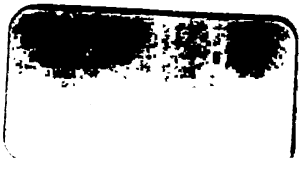

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DEVOTED TO THE

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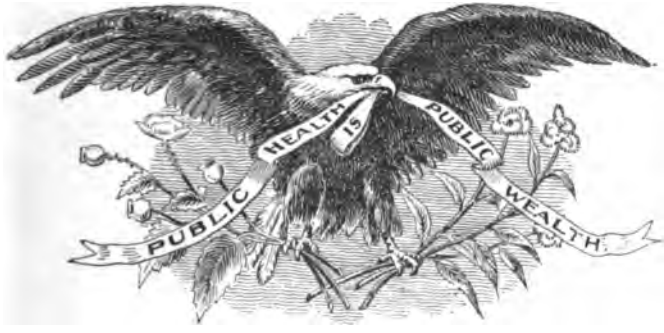

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DEPENDENT CHILDREN AND FAMILY HOMES.*

BY WM. PRYOR LETCHWORTH, LL.D.

It is not necessary at this time to emphasize the importance of saving homeless and wayward children. It is now conceded on all sides that, if we would make social progress and strengthen the foundations of good government, into the minds of this unfortunate class must be instilled principles of morality, thrift, industry, and self-reliance. It only remains to consider the best ways and means of accomplishing this.

At one time the orphan asylums and similar institutions were thought to be the only efficient means of saving homeless children; but the difficulty of providing in this manner for the large number to be cared for, and the disadvantages resulting from massing children under the artificial conditions of institutional life, have led to the utilization of family homes as a substitute for the orphan asylum, the latter now being regarded more as a temporary refuge and training school for suitably preparing the child for admittance into a desirable home. The family home has come to be accepted as the natural provision for all children, the unfortunate as well as the fortunate. The story of "Your Little Brother James," ingeniously and effectively told by Miss Pemberton, forcibly and truthfully illustrates what can be accomplished by providing a good home for a homeless and wayward child—a home in which kindness and sympathy and love dwell in the hearts of a wise father and mother.

* Read at the National Conference of Charities and Correction, held at Toronto, July 7th to 14th, 1897.

It is not the object of this paper to define any arbitrary system for restoring children to family life, but rather to outline the salient points of some existing systems, and to stimulate discussion on a topic of deep interest, without attempting to treat it exhaustively.

While the orphan asylums usually find good homes for such children as they place out, complaint is made by some of them of inability to find a sufficient number of such homes. In New York State some superintendents of the poor are able to place all the children coming under their jurisdiction in homes, by adoption or indenture; but so much of the time of these officers is necessarily taken up in the discharge of their regular duties that the placing out of children, which requires time and patience, is not always done with the care that it should be; while the frequent changes in the office of superintendent make it impracticable to maintain a continuous supervision over them. The children placed out by one superintendent rarely receive attention from his successor. Where agents have been employed by county boards of supervisors to do this work, it has proved successful according to the fitness of the agents selected for the peculiar work and the care and conscientiousness exercised in its performance.

In my observations, extending through twenty-three years of official inspection as a State Commissioner of Charities in New York, I found the wrongs which dependent children suffered from being placed in unsuitable homes, through indifference before placing them and inattention and neglect afterwards, to be very great. Legislators and philanthropists, however, are devoting their attention to correcting this evil. In the last session of the New York Legislature, a bill was introduced under the auspices of the State Board of Charities providing that the work of placing out dependent children and of supervising them afterwards should be governed by rules established by the State Board of Charities. The Legislature added a clause to the effect that all dependent children should be placed with foster parents of the same religious faith as the child, and made an infraction of the rules a misdemeanor. The bill was passed by both branches of the Legislature, but was opposed before the Governor by some of the societies specially engaged in rescuing homeless street children in New York City, because of the impracticability of always finding homes of the religious denominations required. The bill was not approved by the Governor and failed to become a law. As the statutes of New York now stand, a child committed to an orphan

asylum or to a juvenile reformatory shall, when practicable, be sent to such as are controlled by persons of the same religious faith as the parents of the child. When children are adopted from charitable institutions, chapter 272, section 65, of the Laws of 1896 makes the following provision: "Where an orphan asylum or charitable institution is authorized to place children for adoption, the adoption of every such child shall, when practicable, be given to persons of the same religious faith as the parents of such child."

The subject of State supervision is of such importance that I think it should receive the attention of the legislature of every State, and that a system should be provided regulating the manner in which homeless children shall be placed in families, and providing a method of supervision over them afterwards which is not obtrusive or offensive to foster parents who have received children as members of the family, but which is, nevertheless, adequate to afford ample protection to the child.

Massachusetts has a State system directed by its Board of Lunacy and Charity, which is applicable to State wards having a local settlement and not under the charge of local authorities. The overseers of cities and towns are required by law to place pauper children over four years of age who are in their charge in some respectable family in the State or in some asylum, to be supported there by the city or town, according to the laws relating to the support of the poor, until they can be otherwise cared for; and the overseers must visit such children personally or by agents at least once in three months. If an overseer fails for two months to place out any pauper child as required by law, the State Board of Lunacy and Charity assumes the legal powers of overseers and may place out such child and look after its welfare.

Such dependent and neglected children as are wards of the State and are over three and under twelve years of age come under the supervision of a subdivision of the Department of Indoor Poor. Four women in this subdivision, which is directed by a woman, are charged with the special duty of looking after these children, whether temporarily boarded or permanently placed in families. These visitors assure themselves, by frequent examinations and correspondence, that the children are properly taken care of, that they attend school and are treated in every way, as far as practicable, as children of the family. In addition to the four visitors named, one woman, a visitor at large, with two assistants, coöperates with a corps of auxiliary visitors distributed over the State

in the placing out of girls over twelve years of age in families and looking after them thereafter. The Department of Indoor Poor also exercises very important functions affecting delinquent children.

The large number of earnest women who are identified with the interests of homeless children under the Massachusetts system, makes the work in that State much more effective than it would be otherwise.

In Michigan, children becoming a public charge are generally committed as wards of the State to the State Public School at Coldwater. They may be sent to private asylums and there maintained, but not at the expense of the public. County superintendents of the poor are authorized to commit children to the State Public School, or they may place them out in families. But whatever disposition may be made of dependent children, the State, in one sense, extends its protection over all of them; although the supervision of the State Board of Corrections and Charities does not extend to orphan asylums, houses of the Good Shepherd, and similar institutions. These institutions are not required to make reports to the State board, and consequently the statistics respecting children in institutions are not included in the biennial reports of the board, which practically accounts for the small number frequently reported as being under institutional care in that State. A law for the protection of children in Michigan makes it a misdemeanor, with the penalty of a heavy fine, for any person or institution in the State to place out a dependent child in a home until the home has been examined and a favorable report made of it by one of the county agents. The same law requires that county agents shall visit homes where children are placed and report to the institution placing them. It also confers the power upon such officers to take children out of homes where they have been placed if the homes are found unsuitable, or the children are not properly cared for, and either place them in other homes or send them to the State Public School. In this institution, which is built upon the cottage plan, the children are classified on entering, and an effort is made to prepare them as soon as practicable, by suitable instruction and training, for entrance into family homes through a county agency system. The average length of detention is about one year. The county agents are appointed by the Governor, one for each of the eighty-five counties in the State. The aim is to select and appoint only such persons as are charitably disposed,

and who are capable of acting as safe advisers to parents and guardians of children and to magistrates. The compensation allowed the agents is small. It is the duty of these county agents to coöperate with the board of control of the State Public School in finding suitable homes for children that have been committed to the school.

The county agents have other important duties to perform. These extend to delinquent children. The statute provides that no child under sixteen years of age shall be sentenced as a criminal unless a full examination or inquiry is previously made by one of the agents as to the environments of the child and the circumstances attending its offense. It is made the duty of the judge to counsel with the agent respecting the child, and the judge may in his discretion direct that it be returned to parents or guardians or friends, or be indentured, or sent to the reform school, or the sentence may be suspended—as may appear for the best interests of the public and of the child. County agents are required to report to the State Board of Corrections and Charities.

The practical operation of the Michigan State system for placing out dependent children is as follows: For general distribution throughout the State, the board of control issues a pamphlet circular explaining how children may be obtained from the State School, with instructions as to what is required of foster parents after they have taken children. The pamphlet contains a list, with the post office address, of all the county agents. Persons selecting children, either by a visit to the school or by correspondence, are required to make an application in a prescribed printed form. This is sent by the superintendent of the school to the county agent of the county in which the applicant resides, who visits the home of the applicant and reports upon its fitness and the truthfulness of the statements made in the application. If this report is satisfactory, the child is then delivered to the applicant upon sixty days' trial. Notice of the fact is then sent to the county agent. Should the child be returned to the school, or should he be adopted or indentured, the agent is informed of the action taken.

In addition to the county agents, there is also a State agent under the special direction of the board of control of the school. His duty in part is to visit yearly the children placed out, devoting four months to each of the three sections into which the State is divided. The county agent makes a report on the same district for another four months of the year, and the guardian or foster parent

makes a report respecting the child for still another four months. In this way each child placed out is heard from through one of these sources once in every four months of the year.

The county agency system of Michigan is held in favor with the Board of Charities of the State, and is certainly doing in connection with the State Public School a far-reaching, thorough, and beneficent work. With some modifications, the Michigan system has been adopted by Minnesota, Wisconsin, and Kansas.

In Ohio, dependent children reach family homes mainly through the agency of County Homes, which are supported by counties and controlled by four trustees appointed by the county commissioners. The trustees serve without compensation, and not more than two of them can belong to the same political party. The statute also provides for the appointment by the county commisioners of three women as an advisory board, one of whom shall be a member of a humane society, to coöperate with the board of trustees of each home. It is made their duty to visit the children's homes at least once in every three months and thoroughly examine them and the children inmates; and if they deem it desirable, they may make written reports and recommendations to the commissioners. It is made the duty also of one or more of them to visit children indentured or otherwise placed out, "as far as practicable," at least once a year, and in case of maltreatment or insufficient care, to report the same to the trustees of the home, who are authorized by a clause in the indenture papers to remove the child. The duties devolving upon the advisory boards are now generally discharged by county visitors appointed by the State Board of Charities; and the law requiring county commissioners to appoint advisory boards is practically disregarded.

County boards may employ a paid agent to assist in finding homes for children and visiting them afterwards. It is not required that families shall be visited before children are placed; nevertheless, the statute provides that careful inquiry and satisfactory evidence shall be furnished to the trustees that the person taking the child is a suitable person to be entrusted with its care.

The law authorizes the establishment of Children's Homes in each county; or a number of counties, not exceeding four, may unite in forming a district home. In 1878, I attended with Governor Bishop and Reverend Dr. Byers, then Secretary of the Ohio State Board of Charities, the dedication of one of these homes, which was among the first that were founded. It was not antici-

pated then that there would be a large number of them built or that children would remain long in them. They were designed as temporary refuges to save children from commitment to the infirmaries. In respect to the number of homes that have been built and the detention of inmates therein, these expectations have not been fulfilled. In the eighty-eight counties of the State there are now forty-four of these institutions, and the number of inmates has increased in a greater ratio than the population. Since the establishment of County Homes, however, the children have been almost entirely rescued from the county infirmaries. On September 1st, 1882, there were 1,070 in these institutions; and on September 1st, 1896, there were but 81 between the ages of three and sixteen years.

The Ohio system of County Homes has its advantages; but, as intimated, there is a tendency to abnormal institutional growth, which threatens to prevent the rapid absorption of children into the normal condition of home life. The qualification in the statute that children placed out shall be visited by a commissioner at least once a year, "if practicable," and the optional requirement of a paid agent to assist in finding homes and visiting them after the children are placed, and the failure to require that homes shall be officially visited before children are placed in them are weaknesses in the system.

Pennsylvania has no State system, but the plan of boarding out children has been adopted on a large scale by the Children's Aid Society of Pennsylvania. This society places out children of Philadelphia, and has an arrangement with a considerable number of counties in the eastern part of the State for placing out their children. These are, in some instances, adopted into families, but more generally they are boarded until they are old enough to earn their living, when they are permanently placed, without compensation, with the family with whom they have been boarded, or they are withdrawn and placed in other families who are willing to receive them without payment for board. This method has been adopted in some other parts of the United States, and is substantially the same as that introduced by Miss Joanna M. Hill into England, whereby the children in the workhouses were removed from the demoralizing atmosphere of the workhouse to the purer and more elevating influences of family life. This method is also practiced in Scotland; and from personal observations made in visiting groups of children so placed in hamlets and little villages

in both countries, the work seemed to me commendable. The work of the Children's Aid Society of Pennsylvania is highly spoken of by the Pennsylvania Board of Public Charities. It is easy to adopt this system, because many persons will take children for compensation who would not take them out of pure benevolence or a desire to coöperate in child-saving work. It has been found, however, in many localities where the boarding-out plan has been adopted, that the voluntary system is displaced. People will not gratuitously take upon themselves the burden of a work for which their neighbors are receiving pay. The rearing of children in this way becomes a business, as is the boarding of the insane in families. Such a system requires close supervision, checks, and counterchecks, as does any successful business enterprise.

The Pennsylvania society has a large force of agents and visitors who inspect the homes of applicants before children are placed in them. The agents examine the environments of the home, and watch the child critically after it enters the home. Frequent reports are required from the foster parents, from the school which the child attends, and from the pastor of the church to which the foster parents belong. All visits to the home by the society's agents are recorded in books kept for the purpose at the general office, and a complete history of the child and of everything pertaining to its interests is preserved.

One of the most powerful agencies in America for restoring dependent and homeless children to family life is the Children's Aid Society of New York City, which, during the forty-three years of its existence, has placed upwards of 85,000 children in families in various States of the Union, but mostly in homes in the West. The plan of this society is to send an agent to a selected and prosperous district in one of the Western States, who makes his headquarters in some town or village. To use his own language: "I then set about finding who are the best informed and best hearted people in the place, explain our work, and organize a committee of representative persons, residents of the town, to coöperate with me. I then advertise that a party of children will be brought into that place on a given date, and that parties desiring children must apply through, and get the approval of, that committee. The committee get together before my arrival, and determine upon the applications as to who are proper persons to take children. When the children arrive, they are assigned by me on the recommendation of the committee, and that committee acts as the local guardian of

the children. If they find that they have made a mistake in assigning a child, they are authorized to remove it and place it elsewhere. We do not very often have to do it, but we reserve that right. When I return to New York, the full particulars respecting each child are given in to the office and there recorded. The office clerk charged with this duty soon writes to each person having a child, inquiring how they like it and how the child is getting along. Within the year an agent from New York visits the place and investigates each and every one of the homes in which children have been placed; and if he finds the child is better than the home, he removes it and looks up a good home for it. The society employs two men for that purpose, one alternating with the other.

The Boston Children's Aid Society is conducting a somewhat similar work on a smaller scale. Its methods of placing out are careful, its after supervision thorough, and the results are reported as satisfactory.

The humane work for homeless children represented in Ontario by Mr. Kelso has some novel features which may be engrafted with profit upon other systems.

Some of the orphan asylums in New York State, the management of which is mainly in the hands of women, have been very successful in saving children through placement in families. Deserving of special mention, in this respect, is the American Female Guardian Society of New York City. The society makes a careful scrutiny of the proposed home and its environments before placing out the child. Subsequently, by visitation and correspondence, an intimate knowledge is kept up of the child's welfare and progress, with counsel extended, if necessary, to both foster parents and child, thus removing friction and preserving harmony for a long series of years. In one of my visits to the society's rooms some years ago, I found an aged couple who had just returned from a visit to their two children, who had been committed, when quite young, to the society's keeping, by the court. The mother had frequently been sent to Blackwell's Island for drunkenness; and the father, at the time his son and daughter were committed to the society's care, was an inmate of the penitentiary. The disposition made of their children was kept secret from them, and they were told that they should never see them unless they reformed, as they would bring disgrace upon their offspring. The parents did finally reform. Both of the children had become members of the church and were heads of families. In this way the patient, persevering

Christian work of the society had saved not only the children, but the parents. As is customary with this society in every instance, the full particulars of the history of these interesting cases are recorded on its books.

During recent years there has been a large accumulation of children in the orphan asylums of New York State, especially in the municipalities of New York and Brooklyn, consequent upon increased admissions and longer detention, so that institutionizing influences have retarded the development of the children, while the public have been burdened with a needless expense. The State Board of Charities found in its examinations during the past year many inmates of these institutions that had passed the legal age of children and were still retained as public charges. Under the authority conferred by the amended State Constitution, these abuses are now being corrected. This state of things has not been universal, however. The city of Buffalo, for example, has not as many children in its orphan asylums now in proportion to its population as it had twenty years ago. There is a popular error respecting the retention of children in some of the asylums, it being thought that they all should be placed out in families, whereas in many cases this is impracticable. In making an examination of the inmates of some of the Buffalo asylums a year or two ago with special reference to the length of their detention, in one of the asylums I found that there were only two children out of 138 inmates that were eligible to placing out, and that homes were already selected for these two. All the others were either temporarily boarded at the expense of relatives or guardians, or were temporarily committed by the superintendent of the poor to tide the families to which they belonged over some misfortune and save them from being broken up: or they were children that were mentally or physically defective and not acceptable in families. Some of these had been placed out and returned. I found that the asylum averaged a change of inmates about once a year. Those living remote from seaboard cities do not realize the vastness of the work that must be done for dependent children, nor the difficulties that surround it in New York State, with its estimated population of seven millions, its immense immigration of foreign paupers, and the undermining social influences that must be contended with. These should be had in mind while criticising the work.

In comparing the results of work for dependent children in different States, the systems of those States should be kept clearly in

mind. For example, it should be remembered that the children in orphan asylums, houses of the Good Shepherd, and similar institutions in Michigan are not reported to the Board of Corrections and Charities as in New York State; and a comparison of the number of dependent children as reported by the Boards of Charities of these two States is therefore misleading. The same is true of some other States. An interesting article recently published in one of our leading periodicals gives the number of dependent children in institutions in New York State as "about" 35,000. According to the last report of the State Board of Charities, the number of this class on the 30th of September, 1896, was 26,808.

The proper function of the orphan asylum is to prepare children over two years of age, whose habits, manners, speech, and morals need reforming, for the family home with as little loss of time as possible, and to prevent the breaking up of families in bereavement or distress, by caring for their children until the parents can again establish themselves in independence. In this field there is a vast work remaining, and we should not discourage the great organizations composed of benevolent persons working in connection with the orphan asylums, but strive to make their work more efficient by the adoption of active placing-out methods and by raising the standard of the orphan asylum to the highest degree of efficiency.

In localities where dependent children are placed in families there should be organized groups of benevolent people, alive to the interests of homeless children, who, by the exercise of watchfulness that is not obtrusive or meddlesome, will keep informed as to the welfare of children placed out, and by fostering an acquaintance purely personal build up their self-respect, while being in a position to perform the delicate duty of notifying the placing-out agency when official action for protection is necessary. In States having State Boards of Charities, this office, it would seem, might be performed by local visitors appointed by the boards, as is largely done in Ohio. In New York State, visitors appointed by the State Charities Aid Association in some counties have rendered valuable service of this kind. The coöperation of Societies for the Prevention of Cruelty to Children should also be secured, and the name and address of every child placed out given to such a society, in order that corrective remedies may be summarily applied in case of abuse. And above all, whether we have State systems, as in Michigan; county systems, as in Ohio; or rely solely

upon the efforts of private benevolent corporations, we should in all cases have a State supervising system, as there lies at the foundation of all our work the State's interest in the development of the highest type of self-governing, freeborn citizens.

GERMAN EMPLOYMENT OF WOMEN AND CHILDREN.

Consul Monaghan of Chemnitz, writes on July 3, 1897:

An imperial decree dealing with the work of women and children in clothing establishments is in many ways interesting. It shows us how even the lot of the humblest workers may be made easier by the watchful care of a government. The shops covered by the law are those that make all kinds of men's and women's clothing. These concerns must give notice to the local police whenever they wish to employ children 14 or 15 years old. They must hang up in the shops, in conspicuous places, lists of the children employed, the number of pauses permitted them, and a card containing a copy of the law regarding the employment of children. School children must not be employed at all in such shops. Children under 14 years, not in duty bound to go to school, must not work more than six hours in each day; children between 15 and 16 years old must not work more than ten hours. The work of these little ones must not begin before 5.30 A. M. nor must it continue later than 8.30 P. M. Each day must have its pauses, hours in which not only no work must be done, but in which the workers must not be allowed to remain in the shops, except in certain cases. Women must not be employed between 8.30 P. M. and 5.30 A. M., nor must they work after 5.30 P. M. Saturdays or on the evenings preceding holidays. They must not work more than eleven hours daily and ten hours on Saturdays and the days preceding holidays, exclusive at least of a one-hour midday pause. Inasmuch as most of this work depends upon the changes of seasons, the law allows women to work thirteen hours a day in the busy season, but not later than 10 P. M. for sixty days.

INVESTIGATIONS OF WATER SUPPLY BY THE U. S. GEOLOGICAL SURVEY.*

By F. H. Newell, Hydrographer U. S. G. S.

The U. S. Geological Survey, under what is known as the organic law of 1879, is engaged in making a thorough examination of the geologic structure, mineral resources, and products of the National Domain, the latter being defined by law to include the whole United States. This examination of the geologic structure has necessitated the preparation of an elaborate topographic map on a scale of one or two miles to the inch, showing the location of every stream, road, and railroad; of every isolated building in the country, and of the streets and thickly settled portions of towns and cities. In addition it has a feature which distinguishes it from the ordinary maps, in showing by contours or lines of equal elevation the slope and altitude of the surface of the country. Upon this map as a base is colored the distribution of rocks of various kinds and ages and the relations of the rock layers one to another are shown by vertical sections. Knowing the distribution and character of the various rocks it has been possible to discuss the mineral resources and to obtain fundamental facts concerning their occurrence and distribution.

In all of these processes of mapping the topography of the country, of studying its structure and of describing its mineral resources, matters connected with water supply have always been prominent. The topographic map shows the location of the streams and springs and the area and slope of catchment basins. The study of underground structure reveals the conditions which govern the distribution and movement of waters beneath the surface and the influences which affect their burden of soluble material. Furthermore, considered as a mineral resource, water is one of the most important if not the most valuable of all the constituents of the rocks, as well as of the unconsolidated surface deposits. Its

*Read at the meeting of the American Public Health Association, Philadelphia, October 28, 1897.

distribution and fluctuations affect all animal and vegatal life as well as the health and industries of mankind. The topographers, geologists, and engineers of the survey have, therefore, from the very outset, had to deal with data bearing upon water supply and have brought together a great body of facts concerning it.

In order to more systematically arrange, digest, and complete these facts connected with the waters of the country, the Division of Hydrography was created in 1888. From that date the work has gradually extended as experience was gained and the results were found to justify more extensive operations. It now embraces practically three classes of work. The first consists of the measurement of streams in various parts of the country, from Maine to California, and the determination of surface supplies in lakes and rivers. This necessitates operations carried on at intervals through several years and at widely separate points. It also includes the examination of reservoir sites, especially upon the public lands, and the feasibility of using these for increasing the water supply. This branch of the work, which may be considered as the engineering side, is under the immediate direction of Mr. Arthur P. Davis, assisted by a corps of skilled hydrographers, some permanently engaged but the greater part resident engineers occasionally employed in various States.

The second class of investigations is more purely geologic in character as distinguished from the first. It consists in the detailed examination of underground waters and particularly of artesian well conditions. This requires a close detailed study of contiguous areas and a thorough knowledge of the structure of the country. Operations are confined mainly to the western half of the United States, where the deep-seated sources of supply of pure water have their greatest value. Studies have been made in particular in the Dakotas, Nebraska, Kansas, and Colorado, and to a less extent in Ohio, Indiana, and Illinois, and within the Atlantic Coastal region.

The third class of work consists in the preparation of reports upon the best methods of utilizing the water resources, and these include a wide variety of subjects, from considerations of questions of water storage, pumping, irrigation, filtration and other matters pertaining to agriculture and domestic supply. While conducting all of these investigations, each with distinct reference to utilitarian ends, the attempt is made to treat the data acquired in a thoroughly scientific manner and to obtain facts concerning run-off and the

laws governing variation of supply, such that the information obtained may be a distinct contribution to knowledge. The results of these investigations are applicable primarily in considerations of water supply for agriculture and for power or for industrial purposes. The sanitary side, however, while it has been less conspicuously presented has not been neglected, and might properly at this time be brought forward more prominently.

Questions of municipal supply, of stream pollution, and kindred topics must be discussed primarily from the geologic or engineering side; that is to say, the first thing to be considered is that of location, topography, area and catchment of drainage basin, and in the case of underground waters the geologic structure, character and mineral contents of the rocks, rate and distance of percolation, and other minor points which can be determined satisfactorily only when a topographic map is at hand with geologic data and facts as to quantity and fluctuation of the amount of water. The topographic map for the whole United States is progressing rapidly and also the knowledge of geologic structure. At the same time the Division of Hydrography is bringing together facts concerning the daily flow of typical streams in various parts of the United States; is showing how the quantity varies from day to day; the amount and duration of floods and of low water, and other details concerning the regimen of streams. It is also studying the behavior of water underground; its rate of percolation or flow, and showing as far as possible by maps the distribution of waters beneath the surface and the depth of water-bearing strata, so that it will be practicable, in certain areas, at least, for any person to ascertain in a general way before putting down a well the depth and probable character of the rocks from which a supply of water should be obtained.

These fundamental facts regarding quantity are supplemented by general information concerning quality, especially from the side of inorganic or mechanical impurities. The amount of material carried in suspension is governed to a large extent by the quantity of water and changes in the rate of flow, the floods at their onset picking up enormous amounts of dust, sand, and gravel, and becoming relatively less turbid as the volume increases, then clearing with subsiding water. Geologic data in regard to erosion and sedimentation are acquired, these being locally applicable to considerations of the sanitary condition of municipal or domestic supplies. The organic or bacteriologic side is of course a matter for others

to determine, but the samples of water obtained by hydrographers have been made available for studies of this character.

As illustrating the application of this data mention may be made at this time of recent hydrographic measurements carried on within the drainage basin of the Potomac River. For several years measurements of the discharge of this river and of its larger tributarities have been maintained at a few points, giving the daily flow. At the time of the recent drought in August and September, 1897, a systematic reconnoissance was undertaken, the hydrographers visiting and following down each tributary, making frequent measurements of the quantity, noting water powers and incidentally sources and amount of pollution. A small number of men equipped with light instruments and traveling for the most part by means of bicycles, passed over the ground, rapidly obtained the facts concerning the flow of the stream, and took samples of the water, mailing these immediately to the laboratory of the Marine Hospital Service. There the samples were examined bacteriologically and in a few cases chemical analyses were made. The results have not as yet been officially announced and it would be premature to offer final conclusions, but from the progress report of Mr. Arthur P. Davis, the following facts have been compiled.

The main source of pollution of the Potomac is at that portion of the headwaters in the vicinity of Cumberland, Md.; other streams, including the Shenandoah, being relatively unobjectionable. The minimum flow of the river at Cumberland is a little less than 60 cubic feet per second, while the minimum discharge above the city of Washington, near the intake of its waterworks, is over fifteen times as great. Thus, at times of low water, when the pollutions bear the largest ratio to the total supply, the distinctly bad or dangerous water from the vicinity of Cumberland is probably not more than six per cent. of the volume at the head of the Washington aqueduct. This six per cent. of polluted water has, however, traversed about 190 miles of broad river bed, broken by numerous shoals freely exposed to light and air Assuming that the progress of the water is on an average two miles per hour it would require 95 hours for the sewerage from Cumberland to reach the Washington aqueduct, or very nearly four days. Although considerable improvement might take place during these four days, still it can not be claimed that these conditions are desirable or proper.

These are the elementary facts of the case. To go into the matter of pollutions a little more definitely it may be noted that on the

headwaters of the North Branch of the river are 18 sawmills discharging their sawdust directly into the stream. Besides these are several tanneries pouring effluents directly into the water, and at one of these the refuse tan bark is placed where it will be washed away. Numerous mines also contribute coal dust and drainage waters heavily charged with iron and other mineral matter in solution. At Luke, Md., a small village about 30 miles above Cumberland, is located a large paper mill with a capacity of more than 100 tons of paper per day. This is made from wood, disintegrated by chemicals and heat, the refuse being discharged into Potomac River at the rate of over 100,000 gallons per day. Below this mill is the town of Piedmont, W. Va., contributing offal to the stream. On the opposite side, at the town of Westernport, Georges Creek debouches, bringing in the drainage from several thickly settled communities and about 20 coal mines. These waters are exceedingly bad, although apparently clean. At Keyser are a number of factories, including a tannery and a woolen mill, each with its characteristic effluent. At Cumberland the drainage water from several mines and the refuse from a paper mill, brewery, distillery, cement mill, tannery, dye works, and gas works, is brought in by Wills Creek. Below the mouth of this stream is a tight dam raising the waters of the Potomac and ponding them for nearly three miles. This relatively dead water receives all of the pollution above noted, together with the sewage of Cumberland, a city of 15,000 inhabitants. About 400 yards above the dam is the intake of the Cumberland Water Works, supplying a fluid whose qualities have long been a cause of extreme dissatisfaction.

The South Branch of the Potomac and other tributaries down to Harpers Ferry, the junction of the Shenandoah, were found to be relatively clean, the only causes of pollution of note being several tanneries. In the Shenandoah Valley are also a number of tanneries and small manufactories with drainage from small agricultural towns. At Harpers Ferry are pulp mills, one each on the Potomac and Shenandoah. Below Harpers Ferry are no pollutions of consequence down to the intake of the Washington Water Works.

During the period of high water the Potomac is swollen to a volume of from 100,000 to 200,000 cubic feet per second, and at such times the dilution of the sewage is extremely great. But during the periods of low water, mainly from July to November, the dangerous water from the upper river reaches a relatively large

volume, as shown by the systematic measurements. These figures, although they do not develop anything which has not been before known or suspected, yet serve to put definitely upon record facts which when publicly understood can not fail in producing a decided strengthening of public sentiment in favor of control of pollution and filtration of water supplies. Nearly every river of the United States of considerable size, receives its waters from two or more States and with these, pollutions, much of which might be done away with at moderate expense. In rare cases any one State can control the character of the water flowing within its boundaries, but this matter, if rectified at all, must be through some inter-State or Federal control. It has been demonstrated again and again that purification of sewage by filtration or by irrigation is practicable and can be conducted at reasonable expenditure, and it is to be hoped that the time is rapidly approaching when public sentiment will be aroused to the degree of compelling such filtration whenever public health and comfort are imperiled. Toward awakening such public sentiment the Division of Hydrography of the Geological Survey is trying to do its part, by presenting definite facts clearly and impartially and showing what are the character and limitations of the natural water supplies and how these may be utilized and protected.

THE UNSATISFACTORY CONDITION OF GARBAGE DISPOSAL IN AMERICA.

Garbage disposal in this country is in a very unsatisfactory condition. Only a comparatively few cities have adopted any modern method of disposal and in many of these the cost of the work is altogether too high and complaints of nuisances from the disposal plants are frequently made. This deplorable state of affairs is largely due to the fact that as yet the problem has not been approached in so thoroughly scientific a manner as have other problems in engineering. While scores of our most prominent engineers are connected with the development of water supply and sewerage systems, it would be hard to name three engineers of high professional standing who have designed any of the garbage disposal plants now in operation in this country, or taken any essential part

in the evolution of such systems of garbage disposal as are now in use.

Nearly all the garbage furnaces in the United States have been evolved by mechanics and artisans of an inventive turn of mind, supplemented by suggestions from small capitalists and sales agents financially interested in the matter. Many of the different makes of furnaces, naturally enough, are but slight modifications of earlier makes. Of garbage utilization or reduction plants most have been developed by men connected with rendering establishments devoted to the production of grease and fertilizer from old bones and dead animals.

Both cremation and utilization systems are sadly in need of being taken in hand by competent engineers. The reasons why this has not already been done are various. The most important are that as a class the inventors in these lines have not been engineers at all and, like the vast majority of inventors, have been so possessed with their own ideas that they have failed to make any real study of the state of the art, further than in connection with trials of their own devices. Both these inventors and the small capitalists whom alone most of them have been able to interest have shunned engineers, partly through jealousy and partly because they did not wish, or thought they could not afford, to incur the expense of consulting them. This has been true of the inventors in both lines, but more true of the capitalists interested in cremation than those who have taken up utilization processes. Many of those who have become financially interested in utilization processes would not of themselves hesitate to spend money for the best engineering advice, but the inventors whom they have backed have declared such expenditures unnecessary and the capitalists themselves often yield to the temptation to work for the speculative profits arising from stock dealing rather than the slower, and perhaps smaller, returns from the business itself. Doubtless the speculative aspects of garbage utilization processes have contributed largely to keep our best engineers from taking up the subject. They could be induced to give their energies to the development of such systems only when allowed to work along scientific lines, whereas their possible employers have been unwilling to expend money for this purpose, through ignorance or impatience to realize quick profits instead of putting money into experimental researches for future returns. Where speculative ideas have ruled there has been little opportunity for work by an able and conscientious engineer. His ser-

vices would be desired to bolster up a system, as developed, rather than to search out and remedy the weak points of a system.

In saying what we have we do not mean to convey the idea that there are no good garbage disposal plants or systems in this country. We believe that there are a few which either already have been or are capable of being brought to a high degree of perfection, although most of both plants and systems have many unsatisfactory features.

In this connection it is proper to refer to the conclusions of Mr. Rudolph Hering, M. Am. Soc. C. E., as expressed in his report as chairman of the Committee on the Disposal of Garbage and Refuse, of the American Public Health Association, which was published in our issue of Nov. 4 (December SANITARIAN). Mr. Hering conveys the idea that no fully satisfactory garbage disposal plant has been built in this country, as yet; that all utilization processes thus far in use are probably doubtful financial ventures, and are to be viewed with suspicion from a sanitary standpoint unless located so far from centers of population that any offensive odors from the process can give no trouble. Mr. Hering further seems to be convinced that the English type of garbage furnace is an unquestionable success, especially as shown by recent tests at Berlin and Hamburg, Germany. Now, what we have already said above agrees largely with Mr. Hering's evident conclusions regarding the general unsatisfactoriness of American garbage disposal plants. We think it probable, too, that the English type of garbage furnace comes the nearest of anything yet evolved to what a garbage furnace should be. We question Mr. Hering's conclusion that all utilization plants not remotely located must be looked on with suspicion, unless, indeed, the same rule is to apply to garbage furnaces. We believe that garbage utilization plants have been, or may easily be, designed and built in which the process is so continuous from the reception of the green garbage to the packing of the products that few or no offensive odors can posibly be given off, and in which such odors as do arise can be subjected to some treatment rendering them unobjectionable. With this accomplished, why should a utilization plant be excluded from any locality where a crematory would be permitted? Reasons, largely sentimental, may relegate plants of either type to isolated locations, but on such grounds one would be tolerated no longer than another.

One other point in Mr. Hering's paper should be noted. He

inclines to a combined removal and treatment of garbage, ashes and other refuse, stating, of course, that this is not possible where the utilization process is in use. Obviously it is simpler, and causes less friction to allow this mixing, as then only one receptacle is required for each householder. If cremation is to be employed the greater the amount of combustible matter mixed with the garbage the better, but in many cases probably it will be found advisable to draw the line at ashes. Alone, these are perfectly sanitary. They may be removed at less frequent intervals than is necessary for garbage, and as they are an excellent material for filling they generally need receive only a short haul. Now, the total cost of garbage disposal is largely dependent on the length of haul, so that economy may often demand the exclusion of ashes from garbage in order to reduce the cost of transportation. In addition, ashes may often prove so great a clog to a garbage furnace as to offset the fuel value of any coal they may contain. Mr. Hering rightly says in his report that no hard and fast rule can be laid down applicable to garbage disposal in all localities, and that sanitary considerations should always be placed before financial. He by no means condemns utilization, nor is he a partisan for cremation, but it does seem as though he regards utilization with too much suspicion.

Despite the criticisms we have made above, we most heartily commend Mr. Hering's report as a whole. His conclusions are based on a mass of statistical and other information, secured at great pains and expense, which it is to be hoped will speedily be made available to those interested. It is very probable that Mr. Hering would agree with us in believing that the promising results with cremation abroad, some of which were obtained in tests extending over but a few months, doubtless with rigid engineering supervision, do not indicate conclusively that as satisfactory results would be secured under the conditions of the average American city. Nevertheless these foreign examples are encouraging as showing what is possible when garbage disposal is conducted on a sound engineering principle rather than on a political or speculative basis.—Engineering News, Nov. 11, 1897.

OCEAN AND HIGH-ALTITUDE HEALTH RESORTS.*

Recent knowledge of microbic life, as related to the purity of the atmosphere, justifies the inference that the benefit to consumptives derived from sea voyages or from resort to high altitudes is independent alike of the extreme density and moisture of the ocean atmosphere in the one case, and of the rarefaction and dryness of the air in the other. In both cases the air is inimical to tubercle bacilli, as it is also inimical to other bacilli—indeed, to all microbic life. And, barring the preventable conditions of a foul bilge and inadequate ventilation of staterooms and other sleeping quarters on board ship; close bedrooms, defective house drainage, unhealthful surroundings, and dust—barring these conditions respectively, ocean atmosphere and high altitude are alike propitious and commendable to persons afflicted with or predisposed to pulmonary consumption.

Ocean air, however, it should be understood, is not the air of the seacoast, but of the open sea, sufficiently distant from the land to be free from all contamination. It is more equable and, in corresponding latitudes, excepting the tropics, warmer than over the land; and within the tropics, though warm, is never sultry, as it is at the same degree of temperature on the land, nor is the temperature so high. In the tropics, the range of the thermometer at sea is from 72° to 84° F., and rarely as high as 86° F. at midday. The mean relative humidity is about 73.5 per cent. (100 representing complete saturation.) The humidity is usually a little greater in the night than during the day, but commonly is less at all times than that of the air of seacoast places.

Besides the excess of moisture, as compared with that of the land distant from the seacoast, the ocean air always contains some sea salt, although, excepting in the trade winds or in gales, in infinitesimal quantity; never in such excess even in the trade-winds or gales as to be otherwise than a healthful stimulus to respiration. It also possesses properties beneficial to certain specific diseases.

The special advantages of an ocean atmosphere are:

1. Its entire freedom from the dust common to domestic conditions—particles of tissue wastes of all sorts, hair, straw, feathers,

*Abstract from "Winter Health Resorts"—Medical Record, November 27, 1897.

cobwebs, insects, dried sputa, etc.; from traffic dust—the wear of travel and friction; from all insoluble and irritating grit wafted from paved streets, houses, walls, dusty roads, or sandy plains. It is air, in short, that contains a maximum of the elements essential to life and health, and a minimum only or none at all of the deleterious substances always floating, in greater or lesser degree, in the lower stratum of the atmosphere over the land.

2. Complete change of scene and rest; relief from all sources of excitement and worry—newspapers, telegrams, messenger boys, letters, expectations, and all sorts of indescribable turmoil. And the passing breeze is not from just over the marsh or stagnant pond, nor is it from the malodorous tenement-house district; it bears no foul emanations and no disease germs. Every breath of it is brand new, and when exhaled it never hovers round to taint the next inspiration, but is wafted away and speedily transformed into the purer elements of the atmosphere.

Thus inhaled throughout the day, the pure soft air soothes the nerves, invigorates the functions, promotes sleepiness, and welcomes repose. Sound slumber supervenes, and with no business appointments to be met, abundant time is taken for breakfast, dinner, and supper—with an invigorated appetite and improved digestion.

The invalids to whom an ocean atmosphere is most commendable are pointed out by that which is just above stated—consumptives in the incipient stage and persons predisposed to consumption; persons of scrofulous diathesis; persons afflicted with nervous *complaints*—not organic nervous diseases, but the easily recognized conditions of overwork though often undefinable, the result of physical or mental nervous strain, anxiety, worry, irritability, debility, nervous breakdown, insomnia; and persons afflicted with chronic nephritis.

A WISE FATHER.—Mrs. Ferry—I had an awful time getting Bobby to take his medicine. I begged him to be good in all the words I could think of, but he wouldn't do anything but shake his head.

Mr. Ferry—You didn't go at him in the right way. What does a boy of his age care whether he is a good boy or not? You ought to have dared him to take it.—Cincinnati Enquirer.

THE WINDWARD ISLANDS.

An Ocean Voyage.

Apropos to the foregoing extract from the Medical Record's summary of "Winter Health Resorts," it occurs to the editor hereof to describe somewhat in detail and to commend a delightful and healthful winter voyage that may be undertaken weekly throughout the winter from New York by the steamships of the Quebec Steamship Company, A. E. Outerbridge & Co., agents, 39 Broadway.

Several of the islands touched at by the ships of this line are so completely isolated as to afford the nearest possible approach to an ocean atmosphere independent of a ship at sea; and some of them possess particularly favorable and enjoyable conditions as resting places for considerable periods, or even throughout the winter months; while the round trips weekly afford opportunity to change the resting place at pleasure.

Within twenty-four hours from the time of departure, the tourist enjoys the balmy breeze of the Gulf Stream, and with a delightful four or five days more at sea, makes the first stop at Santa Cruz or St. Croix. It is under Danish government, but the English language is chiefly spoken, and the voyager may well stop here for two weeks or longer; for the atmosphere is oceanic. Christiansted is the capital and chief town, and here there are comfortable hotels; as there are, also, at the only other town, Fredericstadt, a few miles distant. But little rain falls, and there is no malaria. The island is twenty-five miles long by five wide; the roads are generally level, good vehicles available, and the scenery pleasing. The whole island is in an admirable state of cultivation—of sugar-cane, cotton, coffee and indigo, and the most luscious of tropical fruits are abundant.

The next stop is at St. Thomas, only thirty-five miles distant. This, too, is under Danish government, but the English language prevails. It consists of a mountain ridge extending the whole length of the island and attaining an elevation of 1,480 feet. The

shore around is deeply indented and the shoal water studded with rocks. The temperature of the air here ranges a few degrees higher than that of the ocean. Charlotte Amalie, the only town, contains about 13,000 inhabitants. This place has some reputation as a winter stopping place for consumptives, as also for kidney diseases. There are comfortable hotels at Charlotte Amalie; but for considerable stops, there are better places further along. And here it may be remarked, that one is scarcely out of sight of land during the voyage through this string of picturesque islands. But St. Kitts (the short for St. Christopher), the next stopping place, forty miles distant, would be out of sight but for the great altitude of its highest peak, 4,300 feet above the ocean. This is an English island of great beauty and fertility, comprising an area of 176 square miles, with a population of 31,000. Basseterre, the chief town, is rather unhealthfully situated, between a group of high mountains on one side and barren hills on the other. The mountain is an extinct volcano, a pyramid of black lava with broken walls and a flat top, from which the whole island may be viewed, with a great variety of vegetation covering its slopes. There are good hotel accommodations in Basseterre; a fine cathedral and several churches. There is some magnificent scenery, and there are beautiful roundabout drives. But for the voyager to tarry here, he should rest upon the mountain slopes from two to three thousand feet above Basseterre, or, better, not at all.

Antigua, sixty miles east from St. Kitts, also English, and the most important of this group of the British West Indies, it being the residence of the Governor-in-Chief, is a better place. With its rounded hills and gentle slopes, beautiful harbor and extensive white beach, it is in pleasing contrast with the rugged, rocky surface of St. Kitts. Moreover, the hotel accommodations here, at St. John's, the chief town, are excellent; the society is good and enjoyable. Numerous ponds abound with ducks, and the pastures swarm with plover and curlew. The air is oceanic, and, altogether, it is a good place for a stop-over.

Leaving Antigua in the evening, daylight finds the steamer skirting the French Island, Gaudeloupe, for about sixty miles. This island has only recently been made a port of call for tourist steamers, hence voyagers will find but few innovations of American life; and on this account, the scenes in the market and on the streets are all the more interesting.

Continuing southward, the scenery of the islands, *en passant*,

increases in grandeur and attractiveness; the mountains attain greater altitudes, the cliffs to grander proportions, and the vegetation increases in rank and richness, and covers all with a forest and flowery carpet.

Dominica and *Martinique*, the next stopping places, straddle, as it were, the fifteenth degree of north latitude, lying one on either side, notable for the marvelous beauty of their scenery.

Touching at Dominica, the steamer lies off Roseau, the chief town, long enough to afford tourists an opportunity to take a pony excursion to Mountain Lake, or Grand Bay, both famous places on account of the scenery roundabout, and along the mountain paths by the way. Tourists are notified, however, that while the steamer remains here long enough to allow time for such a trip, in order to meet no disappointment on account of the possible short supply of ponies at the time of arrival, those intending to make the trip should notify the purser in advance, so that notice may be cabled to the agents ahead.

Those who are not well enough, or who are otherwise disinclined to take such a pony ride, need have no misgivings with regard to their enjoyment, however, while the steamer waits. The enchanting view from the steamer's deck is one which never tires. The blooming mountain, for such it verily is, in virtue of the rich verdure and gigantic trees which clothe it, rises nearly 3,000 feet above the sea. At an altitude of 400 feet the mountain sides are studded with tree-ferns waving their great palm-like fronds over an almost impenetrable carpet of begonias, orchids, epiphytes, tillandsias and other plants, indigenous to the West Indies, and never seen in the utmost display of their beauty, as here, outside of the tropics. Two thousand feet higher up are seen great giant trees, festooned with air plants, their outspreading branches interlaced with climbing vines and bush-ropes binding them to the mountain sides. Above this is Mountain Lake, out of view near the top, an extinct volcano, and now a beautiful sheet of water. And in another direction Grand Bay, to be seen by the excursionists. Lest those left behind should suffer eye-strain from the enchanting view, while waiting, there are public gardens within easy walking distance ashore, overlooking the town and the bay, where many beautiful and fragrant tropical plants may be viewed at close range. The round of this accomplished, should the excursionists have not yet returned, while the steamer still waits, sight-seeing may be agreeably suspended by an enjoyable repast of fresh fish, game, and luscious

fruits, at the "Hotel" hard by, which will easily last until the steamer's whistle is heard—"all aboard."

Martinique is shortly reached. It fully equals Dominica in the beauty, and greatly surpasses it in the grandeur, of the scenery; and, as will presently appear, greatly excels it in interest to the invalid. As this island first strikes the beholder from a distance, it appears to be naught but a great hump-backed mountain, towering up nearly 5,000 feet above the sea-level, forty miles long, and covered from base to summit with such a vegetation as the tropics only display. It is about twelve miles broad, comprising an area of nearly 400 square miles, with about 165,000 inhabitants. St. Pierre, its chief city, at which the steamer stops, is situated in the sight of a broad bay, three miles long, with ever verdant and picturesque shores. St. Pierre is a substantially-built town; storehouses with tile roofs; some of the streets and sidewalks are paved, but they are all narrow, and generally crowded. Through the streets there constantly runs a gutter of clean water, sweeping away all surface impurities, and with an evidently inspiring effect on the habits of the people. For, if it so happens that the visitor arrives early in the morning, he will find these gutters—from the break of day to an hour later—alive with the people, particularly the younger portion of them, with their pet dogs, disporting themselves in this delightfully *clean* gutter-water, fresh from the pure streams and lakes of the mountain-side. Moreover, cleanliness in dress and habitation is everywhere manifest among the people.

Beautifully laid-out and clean squares ornamented with choice plants and flashing fountains; a charming public garden in the suburbs, containing a great variety of the wonderful tropical plants, with delightfully shaded walks and a museum; and here, on Sundays, a military band gives excellent music. There is a fine cathedral; a theatre and other places of amusement, and good hotels, at from three to four dollars per day.

The stores and shops are well supplied with French goods of all kinds, and island curios in abundance. There are many delightful mountain drives, over good roads, and many places of interest to visit, during the brief stay of the tourist, or for a protracted stopover. Among the many interesting carriage drives, no accomplished jehu will fail to remind the tourist that a drive to the statue of Josephine, wife of Napoleon, who was born here, and whose memory is cherished by all the natives, is one of the pleasantest.

There is railway and telegraphic communication with Fort-la-

France, the capital (formerly Fort Royal), and easy communication with many places at various altitudes on the mountain slope, with available accommodations for invalids or others, for a stop-over, to enjoy an atmosphere virtually oceanic, plus less humidity at 3,000 to 4,000 feet altitude, at the option of the visitor; with an agreeable temperature, amidst the most delightful scenery, and other outdoor enjoyments.

There are warm mineral springs a few miles distant from St. Pierre, of high local repute, and much visited. But the writer has not been able to obtain any analysis of the water.

Santa Lucia, the next stopping place to Martinique, is alike famous for its picturesque appearance from the sea. Castries, the chief town and capital, lies at the head of a deep harbor, surrounded by strikingly beautiful mountain scenery, with hills and valleys noted for their fertility and salubrity.

Barbadoes, the most easterly of the *Windward* Islands, lies in latitude 13° 10′ N. and long. 59° 32′ W. The other islands of the Caribian Group lie west of Barbadoes, and on this account are called *Leeward* Islands—Barbadoes being the division point. This island has been long remarkable for the extreme density and—excepting occasional epidemics of yellow fever years ago—healthfulness. The total area of the island is but 162 square miles, yet, according to the most recent census, it has a population of 182,306. Its remarkable healthfulness, under the circumstances, is doubtless due to the ocean atmosphere, in its most intensified form—the trade-wind.

The island is divided by a valley near the center into two parts, northern and southern. Near the center of the northern part Mt. Hillably rises to the height of 1,147 feet, but its direction is such as to afford no obstruction to the continuously prevailing trade-wind from the eastward, sweeping any and all possible emanations from the soil, or other source. Bridgetown, the capital, contains about 30,000 inhabitants. There are some very fine residences and pleasure grounds. There are several beautiful churches; fine and well-kept hotels with abundant accommodations for visitors—besides a particularly commodious one, with special reference to winter guests, at a beautiful seaside resort, called Hastings—at $3.00 to $4.00 per day.

There are several celebrated springs, containing, besides iron, carbon dioxide and fixed alkali in different proportions, commendable to anaemics.

It seems almost unnecessary to state, after the reference that has already been made to the conditions of the locality of this island, that the climate is essentially oceanic. The recorded winter temperature ranges from 71° to 85°. It is a particularly commendable stop-over place; subsequently to resuming the voyage by a succeeding steamer of the same line to return—this being the terminus of the Quebec Steamship Company's line—or a change may be made hence to *Jamaica* direct, by taking passage by one of the steamers of the Royal Mail Steamship Company, which here connects. They leave fortnightly. Fare, to Jamaica, $40.00; and from Jamaica to New York, by the Atlas Line, weekly, $50.00.

Here there is arrival and departure, weekly, of the steamers of the Quebec Company's Line, as at New York. The round-trip ticket, taken at the outset, is $108.00; for some specially large deck rooms, $5.00 to $10.00 extra, good for six months. Tickets out to or return from Barbadoes, exclusively, $60.00.

On the return voyage, the steamers touch at all of the most important places—particularly at those where tourists are likely to have stopped over on the outward voyage.

There are, besides, several "Condensed Itinerary" voyages by the "Madiana," "Beta," and other commodious ships of the Quebec Steamship Company's Line at special rates, for which would-be tourists should write to the Company; and by the same line, steamers weekly to Bermuda. Fare, $30.00.

HIGH TENSION AND HIGH ALTITUDES.

Alpine misadventure is a wide word, and includes victims to pathological conditions unrecognized by the victims themselves, whose sudden fall into a crevasse or mountain torrent is set down to "loss of balance," "misplaced footing," or one or other of the many mishaps besetting the mountaineer, when syncope due to cardiac lesion was the real cause. In August, 1874, The Lancet pointed out this "error in classification," when Baron Paccoy, who had for two days been acting as guide to the Queen of Italy, stumbled and fell into a crevasse on the Lyskamm, not, as was at first thought, by inadvertence in walking, but by instantaneous heart failure occurring at the dangerous spot in question. May not this account for the strange disappearance of Mr. Cooper at Zer-

matt, now being investigated at the instance of our Foreign Office by the cantonal authorities? May he not have fallen into the Visp when suddenly overtaken by the syncope not unusual in a septuagenarian beside a rushing, brawling mountain stream? The hypothesis is well worth entertaining, strengthened as it is by the circumstances under which, on Sunday, July 11, the burgomeister of a Westphalian town met his death on the Furka Pass. This gentleman, with his wife and a young Italian officer as compagnon de voyage, left Andermatt on the morning of that day for the Rhone Glacier. Everything went well till they came within sight of the object of their journey, when the burgomeister, rising in the carriage to get a better view, had barely uttered, "Oh! C'est magnifique!" when he dropped down dead. The great altitude, the rarefied air, the high tension—conditions inseparable from Alpine ascents—were too much for a "chronic sufferer from weak heart," and he collapsed accordingly. Now, had this syncope occurred at a difficult spot of the Rhone glacier itself, had it supervened on the edge of a crevasse into which the victim fell, would not the incident have been classified as "accident due to misadventure"—or one or other of the merely pedestrian risks encountered by every Alpine climber? The whole question opens a series of considerations very gravely present to the Swiss medical faculty, in view of the multiplication of such engineering enterprises as the Jungfrau Railway, for example, which will shortly be "ballooning" passengers of all ages and bodily conditions to a height of over 12,000 feet above the sea level. At a congress of the said faculty, held some time ago at Arona, the perils and the precautions incidental to such railway development were fully discussed, and an impressive warning was given to the traveling public not to venture on rapid ascents above the snow line without previous sanction on the physician's part. To no section of that public is the warning more immediately addressed than to the British, who, after the exhaustion of the London season or a nine months' spell of work, professional or other, are found thronging every Swiss mountain inn, and in sheer holiday exultation qualifying by every kind of imprudence for some such fate as comes under the all too elastic heading of "Alpine misadventure."—From the *Lancet*.

A NEW METHOD OF INDUCING SLEEP.*

DR. J. B. LEARNED, of Northampton, Mass.

The sojourner on another planet has been heard from. He has made a diagnosis of the American situation. His telescope is said to have penetrated space and inter-space, and at one glance he has the old school, the new schools, the asylums, and the sanitariums, public and private, in their search after new remedies and new methods, and their offerings of the newer remedies and the newest methods.

He says frail bodies, unstable nerve centres, emotional leakages, and an all-pervading and sensitive self-consciousness constitutes the pathology of the case.

Insomnia is one of the most prominent symptoms of this great body of sufferers. The causes he enumerates as follows: Feeble parentage, long years of indoor training of childhood; tea, coffee and tobacco; the electric motors and the mad rush for dollars and position.

My own experience with sleeplessness began in 1880. Some of the foregoing causes may have had their bearing, but it was the severe concussion of the brain following a collision with frozen earth that took me suddenly from the general practice of my profession and made me a searcher after means to invite sleep.

I have given much attention from that time to the present to the general condition of sleeplessness, its causes and remedies. The drugs in use as hypnotics induce sleep by changes in nerve centres. Temporary, but no lasting good, comes to the owner of these nerve centres. At each successive call for hypnotics is a call also for larger doses. The result is finally, without doubt, more damaging than sleeplessness itself.

Can any measure be of service to us other than drugs sent through the minute capillaries to the citadel of life to induce that normal condition in which growth and repair of tissue goes on? After a long series of trials of mental occupation in the bed, and physical occupation out of the bed during sleeping hours, I came at last to inquire what is the normal condition of our physical

*Abstract of paper read at the late meeting of The British Medical Association at Montreal, Can.

organs and vital forces that make sleep necessary, and how can we in bed extemporize those conditions?

The answer to the first was, and is as follows: The operations of every-day life require a sacrifice of brain and muscular tissue, every motion is accompanied by loss of cells in muscle, brain and nerve. The heartbeat, the respirations, the work done by digestive, secretory and excretory organs, all these wear in operation. They must be restored. Sleep is for this purpose. This condition of want we are made aware of by the tired sensation when normal conditions exist.

How can we extemporize the normal conditions when the abnormal prevail, and sleeplessness is upon us?

It was idle thinking that kept me awake. Cerebral activity, an automatic cellular commotion in one corner of the grey substance, presumably without my order or consent, seemed to run on forever like the babbling brook.

How can it be stopped? Turn off the belts, is the first reply that suggests itself when you take in the fact that grey matter cannot keep up this rattle without vital power. Turn off the belts, then.

Take away the power. I set about it in this way: I ordered the brain to take charge of the respiratory function. In place of the sixteen respirations, six or eight were directed per-minute, made full, deep and regular. They were counted. This was the first duty of the brain. Added to this, I directed changed positions of body, and contractions of various groups of muscle, each group to be in use for a definite length of time estimated by the count of respirations.

The dorsal position, reaching for headboard and footboard, brings into use one set of muscles; elevating the head a half inch brings into use another set of muscles; raising the foot immediately on the head going back to the pillow, and holding it the same length of time, then the next foot going up in like manner to go down at the direction of the brain; all these contractions and relaxations presided over by the brain without permitting any rests or vacations tend to equalize circulation.

A few minutes' experience of work done by the brain (in this way) under the direction and control of the will is very unlike the work done by the same brain not under direction and control. In the one case you may lie an hour, two hours, or three hours mayhap, thinking, or conscious that thinking is being done, and not have the tired sensation come to you such as precedes sleep. In

the other case but a few minutes have elapsed with all these changes to be executed before the drowsy feeling begins to creep over you. Fatigue has already begun to call for rest. Fatigue is the sensation that precedes normal sleep. The brain begins to forget to count respirations. It forgets to lift up the left foot upon the going down of the right foot. It forgets that the bed-clothing was to be raised and dropped a half dozen times as a fan to cool the surface of the body at regular intervals. It forgets the eyes were to open and shut as one part of the programme along with the inspiration, and expiration. Soon each part has forgotten its duty and each part fails to do its duty, sleep comes.

This hypnotic is the normal one, a sense of mental and physical weariness; the result is a normal one. The body was in the normal position for sleep; the circulation of arterial and vital currents were normal.

The condition of these currents induce harmony in the cellular substance, and presumably it is in the power of all chronic sufferers of insomnia to acquaint themeslves with a routine of mental and physical exertion and employment that will bring to them what I have been enabled to acquire as above.

Heart lesions and great nervous exhaustion would counsel only the mildest efforts; possibly contra-indicate altogether. The discreet family physician may be needed to give some assurance to the timid, and to guard the over-venturesome, perhaps.

I know of no means of inviting sleep so much at command, so safe, so effectual, as the foregoing mental and physical exertions under guarded and systematic control when the retiring hour comes and normal sleep refuses to come. I believe we shall e'er long begin to acquaint ourselves with ourselves, and invite normal agents rather than abnormal agents to produce normal conditions. By this process we earn, not by the sweat of the brow, for such effort is not in order, but by patient, continuous application, what nature decreed we should earn, viz., the normal results of healthful activity—sleep.

A KINDERGARTEN SURPRISE.—Teacher—Now, children, we will have our verses. First Small Child (repeating verse)—He that hath ears to hear let him hear. "Very good. Now the next little boy." Small Boy (taking his cue)—He that hath a noth to shmell let him shmell. Great confusion among the kinders.—Chautauqua Assembly Herald.

THE DEMON, ALCOHOL.*

By F. E. Daniel, M.D., Austin Texas.

Women of the Christian Temperance Union:

Upon me devolves the pleasing duty of extending to you, on behalf, and in the name of, the medical profession of Austin, a welcome. We welcome you to our hearts and homes in the fair Capital City, the seat of learning, the home of wealth, refinement and Christian charity: a city where intemperance is but a name, and drunkenness is unknown.

Assured, as you are, of the sympathy of the better element of the medical profession in the grand work for humanity you are doing, I am here to pledge you their aid, support and coöperation, and to bid you God speed. The medical profession are fast becoming your allies in the great Temperance Reform movement. Satisfied, as many of them are, from long experience and observation, that alcohol is not an absolutely indispensable requisite in therapeutics, they are prescribing it less and less each year. That it has its uses, and employed with judgment and discretion, it is a valuable resource in medicine, cannot be denied; but under the erroneous impression that it is a food and stimulant, it has been greatly abused, and I have seen it administered in such excess that the "remedy" has overshadowed the disease, and the patient, instead of dying of pneumonia, for instance, has died of acute alcoholic poisoning. Every well-read physician knows that only about two ounces of absolute alcohol can be consumed, burned, in the human stomach, appropriated to the uses of the economy in twenty-four hours; and any amount given in excess of this enters the blood unchanged, and becomes a poison, the elimination of which devolves upon the heart, liver, lungs and kidneys, frequently overwhelming them and causing death. I have said that alcohol is not a food nor a stimulant. This will be a surprise to many, for it has stood at the head of the list of stimulants from time immemorial. It is not a food, but by lessening the tissue waste ("met-

*An address of welcome on behalf of the medical profession, delivered before the Women's Christian Temperance Union of Texas.

abolism," technically), it lessens the demand for food. After a brief exaltation or stimulation, whereby the physician is enabled, often, to bridge certain crises, alcohol becomes a powerful depressant of vital power; and it is the experience of the best observers, that those who use it habitually, even in moderation, can do less work, sustain less fatigue, and withstand exposure less, than those who do not use it, and the power of resistance to disease is less; when attacked with disease the former yield, when the latter would recover.

A gratifying sign of the times, and one which should give us great encouragement, is the marked decline in the consumption of alcohol throughout the world. It has been greater in America than elsewhere, and, since 1888, amounts to about 30 per cent., nearly one-third. That is, as compared with 1888, the total consumption of alcohol in the United States in 1896, is one gallon per capita less. Think, a moment, what this means. There are 70,000,000 population in the United States. That indicates that 70,000,000 gallons of alcohol less were consumed in 1896 than in 1888. Suppose that there is one man to every seven of the population. It means that each man drank in 1896 seven gallons less than formerly. It means that 70,000,000 gallons of alcohol (absolute, "proof spirit," from which liquors are made, diluted), at, say, $2 per gallon, represents a saving on this commodity of $140,000,000, a sum sufficient to build thirty granite palaces like the Capitol at Austin; a sum sufficient to support every Christian minister in the world.

Soldiers of the Grand Army of Temperance, you are engaged in a crusade almost as sacred as that which, in the twelfth century, had for its object the rescue of the Holy Sepulchre from infidel hands. In those days the men, husbands, brothers, sons, lovers, fired by religious zeal, were sent forth by the women, consecrated to the cause by their prayers, tears and blessings. To-day the women, enlisted under the banner of Temperance, and in the name of humanity, go forth to battle, and the men look on and applaud. You have a foe to meet, more terrible, more remorseless than the Saracen; a despot, who annually demands and destroys the souls and bodies of thousands of our brightest and best. You are invading the domains of the demon Drink. You are to assault the stronghold of the Devil in his favorite role, the whisky traffic; a stronghold entrenched behind millions of capital, and fortified by political power. The struggle will be long and bitter; but as there

is a just God, who controls the destinies of man, whom He created for a nobler fate, the victory will be yours in the end. Do not despair.

We read in Grecian mythology, that in prehistoric times there was, in the Isle of Crete, a monster of most hideous mien, half man and half beast,—a fitting emblem of drunkenness, the fabled Minotaur,—who terrorized the inhabitants of that country. He devoured human beings, and demanded tribute in flesh and blood, and annually Athens paid the terrible tax, by a levy on the youths and maids of Greece. God raised up a deliverer, however, and the monster was slain by the young Greek, Theseus. But, *to a woman* belongs the victory; it was a woman, the beautiful Princess Ariadne, who put into his hands the sword with which the monster was slain. She gave him, too, a thread, by following which he might escape from the Labyrinth, the home of the monster, one from which no living human being had ever escaped. For his valor the princess rewarded Theseus with her hand in marriage. You, women of the Christian Temperance Union, have just such a monster to encounter and overthrow—the modern Minotaur, the demon Drink. He has his gilded labyrinths, the infernal saloons, in every village, town, city and hamlet in the civilized world; in some towns, three or four to every street. Woe to the unwary who enters there, for there is no thread that will ever lead him to freedom when once entrapped in these gilded hells. They sing the siren song to our youth. They are made seductive by bright lights, pretty pictures and the strains of sweet music. It may well be inscribed over the portals:

"Who enters here, leaves hope behind."

And yet, legislation is powerless to mitigate the evil. Prohibition does not prohibit, taxation does not lessen the sales. The falling off in the annual consumption of distilled spirits alluded to above cannot fairly be attributed to any restrictive legislation. (It must be remembered that all manufactured spirit is not consumed by drink, but a large part is used in the arts and sciences.) It is human nature to want that which is hard to get, and it is man's nature, some men, at least, to have whisky at whatever cost, regardless of the privation and suffering the indulgence of their accursed appetite entails on their innocent dependent ones. The higher the price of whisky, the more money is spent for it. The press attribute the decline to hard times. It is a mistake. Why not give the advance in civilization, the Temperance Reform move-

ment, the Women's Christian Temperance Union, and doctors, credit for part of it, at least? Public sentiment has had a great deal to do with the lessening of drunkenness. Twenty years ago the habit of treating was almost universal. It was a courtesy, which, when extended, few dared refuse. It required a brave man to decline to drink when asked. It gave offense, and not infrequently led to strife. It was not uncommon to see our best citizens enter saloons, and to see them more or less under the influence of liquor. Now, no self-respecting man will frequent a saloon. No business man will employ a drunkard. I believe that the saloon is still the great evil of the day, and is responsible for more misery, sin and suffering than all other causes combined. But, how deal with it? There is but one way,—make it unpopular. Make it odious. Let drunkenness and dishonor by synonymous. Let the odor of liquor on the breath be a badge of disgrace. Let every young woman pledge herself that she will not receive the attentions of any man on whose breath is the taint of the accursed, soul-destroying poison. In this way the youth, at least, can be saved from the dangers of drink.

May some fair Ariadne be raised up among you to place in your hands the consecrated sword of Theseus, with which, at one stroke, the demon Drink may be destroyed, and man forever ransomed from the thraldom of his power. May God give you grace and strength to *strike*, till the shadow that now enshrouds so many homes may be lifted. May He hold up your hands, "even to the going down of the sun," and the battle is won,—for Christ and humanity.—Texas Medical Journal.

RAILROADS AND THE DRINK PROBLEM.—The drink problem on American railroads is a question of business, and without any sentiment. If the man who uses spirits in moderation or excess shows any incompetency he is discharged at once. An engine was sent to the shop for repairs more frequently than usual; an inquiry showed that the engineer was a beer drinker. The inference was that beer had disturbed his judgment and made him more reckless, and he was discharged. Practical men are afraid to use spirits on the road for fear they will neglect some duty, and not act wisely in an emergency. Recently, a great railroad corporation gathered all the facts concerning the men, and the conditions of every accident which had occurred on their lines for five years. When tabulated

it appeared that 40 per cent. of all accidents were due altogether, or in part, to the failures of men who were drinking. That in 18 per cent. there was strong suspicion of similar causes, yet no clear proof. In one year over a million dollars' worth of property was destroyed by the failures of beer drinking engineers and switchmen. The companies' rules requiring temperate men for all positions are more rigorously enforced. Engineers find that, practically, they are unable to do good work while using spirits, even in small doses. The coolness and presence of mind so essential in their work is broken up by alcohol in any form.—N. Y. Med. Times.

THE MAN WHO HADN'T TIME.

BY S. E. KISER.

He never had time to play,
  He never had time to rest,
But he worked away and thought of a day
  When what he had done would attest
The usefulness of his life,
  His worth as a man among men;
Then he would quit the strife—
  He would rest on his laurels then.

As a bondman chained he slaved,
  Ever looking ahead;
As a miser he hoarded and saved,
  Grudging his daily bread!
Beyond was a happy day—
  Nearer and nearer it drew—
When his work should be put away
  And care should be banished, too!

At last, upon a day,
  When the sun was low in the West,
He put his work away,
  And sat him down to rest.
But where was the dreamed-of bliss?
  And why was it now denied?
Things seemed to be going amiss—
  So he brooded awhile and died.

—The Cleveland Leader.

MEDICAL EXCERPT.

BY T. P. CORBALLY, A. M., M. D.

PURPURA ATTRIBUTED TO BENZINE.—MM. P. Lenoir and H. Claude stated to the Société Medicale des Hôpitaux—La France Medicale, 5 November—that they had recently had a case of purpura which they thought was caused by chronic poisoning with benzine.

A man, 27 years of age, a dyer, had hemorrhagic spots of an unusual character on all parts of his body, with very copious hemorrhage from the nose and gums, and hemorrhage of the pleura. He died suddenly in a condition of extreme anemia. At the autopsy the hemorrhage of the pleura was found to be extensive, myocardiac infraction as well as subindocardiac echymosis in great abundance on the mucuous of the stomach and intestinal canal; finally, two centres of hemorrhage in the optic layer on the left side and in the region of the bulb.

The origin of the disease seemed to extend back three months, and was characterized by great patches of subcutaneous echymosis. The patient became gradually weaker, and was obliged to stop working. Inquiry made into his previous history showed that for a long time before, during whole days in the performance of his work, he was exposed to the vapors of benzine. He experienced from it a kind of intoxication, a marked affection of the brain, nausea and general discomfort, which usually lasted for a long time after he left the factory.

Relying on experimental tests and on observations similar to our own reported recently by M. Sautesson, of Stockholm, we feel convinced that this case of purpura, of a character somewhat special, should be attributed to slow poisoning by benzine, which finally caused a radical change in the blood and in the blood vessels.

DIPHTHERIA AND BACTERIOLOGY.—M. Barbier communicated to the Sociétié Médicale des Hôpitaux—La France Médicale, of November 5th, the results of his experiments in bacteriology, of which the following is a summary:

1. He found on the autopsy in children that died with diphtheria the diphtheretic bacilli in the viscera—the cervical ganglions.

the lungs, the bronchial tubes, the spleen, the blood, the bulb. These bacilli are extremely virulent.

2. Other micro-organisms were found in the tissues at the same time with the bacillus of Löffler; the streptococus and the staphylococus are met with most frequently.

Researches show that, contrary to what has been written generally on the subject heretofore, the bacillus of diphtheria is not confined to the surface of the false membranes, and that the impregnation of the whole organism with the diphtheretic poison predisposes the patient, in certain cases, to secondary septic infections which act an important part in causing the death of the child.

NASO-PHARYNGEAL POLYPUS.—M. le Dr. Isch-Wall—Le Progres Médical—23d of October, states that large Naso-Pharygeal Polypi can be removed without resecting the bone. He performed that operation on a patient 15 years of age, who had a polypus seated in the nasal pharynx, the masal fossae, the right maxillary sinus, the temporal fossa and the orbit on the same side. The operation, which lasted a few minutes, was performed as follows: The patient was anesthetized and placed, the head inclining downwards. Using the rasp of Doyen, the baselarz and pterygoidan insertions were detached. The tumor was grasped with a forceps while the index finger, introduced into the right nostril, separates with the nail the slender base of the tumor, while it was withdrawn from the pharnyx. The forceps then removed all the pharyngo-nasal portion of the growth, and a sponge pressed into the pharynx formed a compress which was entirely unnecessary, for very little blood escaped from the wound. A large incision was immediately made into the temporal fossa, and the tumor was there exposed and compressed. With the scissors the gygomatic arcade, which obstructed the removal, was divided, and as soon as this obstruction was removed the tumor was easily taken out by traction. The hemorrhage that appeared at the removal of this second portion was easily controlled by compresses. The results of the operation were very satisfactory, and complete recovery was rapid and without complication.

BALL EXTRACTED FROM CERVICAL VERTEBRA.—M. le Dr. Doyen presented to the Académie the history of an interesting operation for the removal of ball from the neck.—Tribune Médicale. The ball, measuring 6 millimeters. was removed from the third cervical vertebra. The ball entered the mouth of the patient

while he was in the act of introducing his whistle to alarm the guard that a criminal was about to injure the railroad. The wounded man, having recovered from the shock, felt very little pain and did not apply to Dr. Doyen for aid until fifteen days after the injury.

Dr. Roussel, his assistant, found an opening in the posterior wall of the pharynx. The projectile made a slight channel on the surface of the tongue; it made its appearance again a little behind and below the angle of the jaw, and seemed to have been very superficial.

On the 20th of September, chloroform was administered, but it was found impossible to remove it as proposed. The ball, of which Dr. Doyen had no idea of the size, was enclosed in the vertebra, much deeper than the examination with the X rays led him to believe. Any violent movement might have led to a rupture of the vertebræ canal.

Dr. Doyen made an incision on the anterior border of the sterno-massoid on a line with the angle of the inferior maxillary, penetrated between the internal carotid and the pharnyx the ante-vertebral muscles which he perforated at the point desired by using as a director a finger introduced into the mouth as far as the centre of the wound, and took up the ball on a little spoon.

This delicate operation lasted eight minutes. The patient is now perfectly well.

The report of this operation is interesting:

1st. Because it is an exceptional case in surgical operations on the cervical vertebræ.

2d. Because it shows the almost incredible depth to which projectiles of small dimensions may penetrate. The ball weighed only 1 gram and .02 centigrams. The weapon used was almost a child's toy, and could not have given it a speed greater than from 80 to 100 meters. A few more milligrams of fulminating mercury (it was an ordinary Flobert cartridge) and the victim would have fallen instantly because the ball would have penetrated the spinal canal, exactly in a line with the "noeud vital."

"GRIP."—Dr. C. A. Bryce, of Richmond, Va., in a recent communication to the Southern Clinic, reports that he "has found much benefit from the use of antikamnia and salol in the stage of pyrexia and muscular painfulness, and later on, when there was fever and bronchial cough and expectoration, from antikamnia and codeine. Throughout the attack and after its intensity is over, the patient will

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How can we extemporize the normal conditions when the abnormal prevail, and sleeplessness is upon us?

It was idle thinking that kept me awake. Cerebral activity, an automatic cellular commotion in one corner of the grey substance, presumably without my order or consent, seemed to run on forever like the babbling brook.

How can it be stopped? Turn off the belts, is the first reply that suggests itself when you take in the fact that grey matter cannot keep up this rattle without vital power. Turn off the belts, then.

Take away the power. I set about it in this way: I ordered the brain to take charge of the respiratory function. In place of the sixteen respirations, six or eight were directed per-minute, made full, deep and regular. They were counted. This was the first duty of the brain. Added to this, I directed changed positions of body, and contractions of various groups of muscle, each group to be in use for a definite length of time estimated by the count of respirations.

The dorsal position, reaching for headboard and footboard, brings into use one set of muscles; elevating the head a half inch brings into use another set of muscles; raising the foot immediately on the head going back to the pillow, and holding it the same length of time, then the next foot going up in like manner to go down at the direction of the brain; all these contractions and relaxations presided over by the brain without permitting any rests or vacations tend to equalize circulation.

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the other case but a few minutes have elapsed with all these changes to be executed before the drowsy feeling begins to creep over you. Fatigue has already begun to call for rest. Fatigue is the sensation that precedes normal sleep. The brain begins to forget to count respirations. It forgets to lift up the left foot upon the going down of the right foot. It forgets that the bed-clothing was to be raised and dropped a half dozen times as a fan to cool the surface of the body at regular intervals. It forgets the eyes were to open and shut as one part of the programme along with the inspiration, and expiration. Soon each part has forgotten its duty and each part fails to do its duty, sleep comes.

This hypnotic is the normal one, a sense of mental and physical weariness; the result is a normal one. The body was in the normal position for sleep; the circulation of arterial and vital currents were normal.

The condition of these currents induce harmony in the cellular substance, and presumably it is in the power of all chronic sufferers of insomnia to acquaint themeslves with a routine of mental and physical exertion and employment that will bring to them what I have been enabled to acquire as above.

Heart lesions and great nervous exhaustion would counsel only the mildest efforts; possibly contra-indicate altogether. The discreet family physician may be needed to give some assurance to the timid, and to guard the over-venturesome, perhaps.

I know of no means of inviting sleep so much at command, so safe, so effectual, as the foregoing mental and physical exertions under guarded and systematic control when the retiring hour comes and normal sleep refuses to come. I believe we shall e'er long begin to acquaint ourselves with ourselves, and invite normal agents rather than abnormal agents to produce normal conditions. By this process we earn, not by the sweat of the brow, for such effort is not in order, but by patient, continuous application, what nature decreed we should earn, viz., the normal results of healthful activity—sleep.

A KINDERGARTEN SURPRISE.—Teacher—Now, children, we will have our verses. First Small Child (repeating verse)—He that hath ears to hear let him hear. "Very good. Now the next little boy." Small Boy (taking his cue)—He that hath a noth to shmell let him shmell. Great confusion among the kinders.—Chautauqua Assembly Herald.

organs and vital forces that make sleep necessary, and how can we in bed extemporize those conditions?

The answer to the first was, and is as follows: The operations of every-day life require a sacrifice of brain and muscular tissue, every motion is accompanied by loss of cells in muscle, brain and nerve. The heartbeat, the respirations, the work done by digestive, secretory and excretory organs, all these wear in operation. They must be restored. Sleep is for this purpose. This condition of want we are made aware of by the tired sensation when normal conditions exist.

How can we extemporize the normal conditions when the abnormal prevail, and sleeplessness is upon us?

It was idle thinking that kept me awake. Cerebral activity, an automatic cellular commotion in one corner of the grey substance, presumably without my order or consent, seemed to run on forever like the babbling brook.

How can it be stopped? Turn off the belts, is the first reply that suggests itself when you take in the fact that grey matter cannot keep up this rattle without vital power. Turn off the belts, then.

Take away the power. I set about it in this way: I ordered the brain to take charge of the respiratory function. In place of the sixteen respirations, six or eight were directed per minute, made full, deep and regular. They were counted. This was the first duty of the brain. Added to this, I directed changed positions of body, and contractions of various groups of muscle, each group to be in use for a definite length of time estimated by the count of respirations.

The dorsal position, reaching for headboard and footboard, brings into use one set of muscles; elevating the head a half inch brings into use another set of muscles; raising the foot immediately on the head going back to the pillow, and holding it the same length of time, then the next foot going up in like manner to go down at the direction of the brain; all these contractions and relaxations presided over by the brain without permitting any rests or vacations tend to equalize circulation.

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as would not report their cases unless the prognosis was very unfavorable to recovery. Hence there were many more cases than were reported.

Notwithstanding, bad as this adminstration was, and however well deserved the forced resignation of the Board on account of it other civil authorities are more responsible for this epidemic than the Board of Health. New Orleans has a Commissioner of Public Works, and on him, and not on the Board of Health, rests the responsibility of the streets, their cleaning, scavenging, etc. Every commissioner for many years has complained that the appropriation of funds is inadequate, and taxation is here so high, because of past mal-administration, that the public will not approve of any higher taxes. The Board of Health has only a small force of sanitary policemen—four or six—to report and remedy, if possible, some of the grossest nuisances, such as night soil and other filth storage. As to the general cleanliness, so very much needed, the Board of Health only protests, advises and petitions the City Council, as it has no authority or means to act.

BOSTON MEDICAL LIBRARY MAY 29 1899

Our knowledge of the unsanitary condition of New Orleans extends over many years, embracing considerable personal observation on several occasions; familiarity with its history in relation with yellow fever, and cultivated correspondence. The soil is water-logged, as it was when the city was founded, and, however clean the surface may be made to appear, the sub-soil is loaded with putrescible matter, a perpetual nidus of microbic life, a constant source of foul emanations, and, under favorable temperature, a tinder-bed for disease germs. Eighteen years ago it became our duty, as a sanitary inspector of the National Board of Health, to aid the New Orleans Board in discovering the foci of and stamping out the yellow fever of that year; necessitating a close scrutiny of the conditions from house to house where there had been cases of yellow fever that year, and many of the year before. Filth storage was practiced by means of vaults, cesspools, "earth" closets, boxes and pots of all sorts, with a degree of ingenuity unequalled by any other that has ever fallen under our observation—which has been extensive.

The inspection vividly brought to mind the subjoined narrative, scarcely less applicable to the conditions of the recent epidemic than it was to that of 1853.

(During the period of our inspection we attended a meeting of the Medical Association, at which there was an animated discussion

on the best means of draining the soil and of sewerage. Moreover, we were assured at interviews with several of the city authorities and some of the most influential citizens that such work would certainly be undertaken at an early period.)

ANTI-YELLOW FEVER.

From the *Delta*, June 22, 1853.

EDS. DELTA—I wish to relate to you a very strange affair which happened to me a few evenings since:

I had driven to the Lake with a friend, and becoming wearied of the place, and he being engaged and likely to stay some time longer, I concluded to walk at my leisure toward town, until he caught up with me with the buggy.

It was twilight, and as I walked slowly, musing over the past, and imagining the future of the great city before me, I saw just ahead, seated upon a stump by the side of the road, one of the queerest little figures you can conceive of. His back was toward me, and he was bent down, very busily engaged at something. As I came to his side I saw that he was sharpening a scythe.

The appearance and occupation of the little old gentleman were so strange, that I stopped to examine him more thoroughly. He had on an old yellow coat, quite voluminous in the body, but with very short sleeves. His trowsers were of the thunder-and-lightning pattern, well shrunk up, and short enough to please the veriest dandy in town. His shirt had a large collar, but was without plaits in the bosom. In fine, his clothes were of antiquated material and cut, quite clean, but neither ironed nor starched.

But what attracted my attention most was his face. His features were very small, pinched and wrinkled, something like old and rumpled parchment. His sharp nose, the quick movements of his bony hands, and the twisting of his puckered mouth as he worked with his hone, denoted nervousness.

At last he got through his job, and passing his finger over the edge to try its keenness, gave a grunt of satisfaction, and looking up, his keen ferret-eyes looking full into mine, he ejaculated—"Ah ha, is that you?" with such suddenness and sharpness, that I was quite startled.

"Dull times. But that's nice, isn't it?" said he, snuffing with great satisfaction the foul wind coming from the direction of the city.

I differed with him, and received for my pains a sharp humph! accompanied with a look of contempt.

"Why," said he, "it's the very thing, and it will be better than that in a few days."

Thinking the old gentleman a little cracked, I ventured to ask him what he was going to do with his scythe.

"Going to work," said he, getting off the stump and stretching himself.

"But there's no grass for you to mow down here."

"No," said he, "I am going into the city to work."

"But there is no grass in the city, either," I suggested.

"Oh, plenty, plenty," said he with a chuckle. "Plenty of my sort of grass; men, sir, men. All flesh is grass, you know. Eh?"

"The Devil!" I blustered out in my astonishment, for I seldom use so strong language.

"No, sir, not the Devil, either; only a friend of his—an old friend. In fact, sir, some people say he is my father. Don't speak disrespectfully of my respected and venerable ancestor, I beg of you," said he, looking askance at me.

"You are Death, then," I tremblingly said, half interrogatively, half affirmatively.

"Yes, sir," said he," evidently enjoying my fright. "Yes, sir, at your service."

"Very much obliged," said I, thinking it best to appear brave; "but I have no present need for your services."

"No, of course not," said he, with a little severity in his tone. "That is the usual answer. I did not suppose you had any use for me;" and he muttered something about jackanapes, and he wouldn't have asked me, and so on.

"Well," said the old gentleman, after musing awhile with his chin resting on the handle of his scythe, "well, isn't it a shame?"

I did not understand what he was alluding to. It was evident his mind had got into a new channel; so I asked, "Isn't what a shame?"

"Ain't you astonished at my personal appearance?" said he, looking himself over with evident pleasure; "you thought I was a naked skeleton. Come, now, didn't you? Speak the truth and shame the ——, and so forth, ahem? Yes, they pictured me as a skeleton, the impertinent rascals, a long time ago, and I have never been able to stop the burlesque. I killed the fellows, sir, but the Press is a great disseminator of falsehood." And the old gentleman rested his chin on his scythe-handle again, and muttering,

"Never mind, what I have lost my respectable father has gained, and it's all in the family"—lapsed into the musing.

"Why do you come to New Orleans this summer?" said I, breaking the silence; "it has been so long since you were here that they don't expect you."

"Young man," said Death, solemnly looking up, "don't talk so like a gump. I do just as you do—follow my nose; and if they don't expect me, more fools they. I like variety, and have an eye to future trade, so I didn't intend coming to New Orleans this summer. I was going North with the other fashionables; but your City Council have broken into my arrangements, and the people will have to suffer."

"But," said I, remonstrating, "how have the City Council broken into your arrangements? And you are not going to make the people suffer for what they have done? Surely they alone should bear it."

"I told you just now," said he, in a very positive manner, "that I follow my nose. If men will live in filth, will make a pest-house for themselves, *que voulez vous, mon cher?* I must act naturally. As for making the people suffer for the acts of their representatives, I do not see any wrong in that. All of us act upon that principle. But as for killing the City Council, there is no use of my troubling myself."

And here Death put up his hand to his mouth, and throwing his head back, gave me a leer, and imitated drinking out of a bottle. Then he broke out into the most outrageous screeching laughter.

"Why, sir," said he, as soon as he had recovered from a fit of coughing, brought on by his cachinnations, "I have heard some envious fellows say that the reason why the Council did not make their subs let the water flow through the gutters was, that they are interested in lots in the swamp, and are afraid they might be flooded. I have heard others say that they were so anxiously electioneering for the next Council, that they had neither time nor disposition to look after the Street Commissioners. Others say that since the city has been consolidated, they are not competent to attend to their own huge labors, let alone the care of gutters and sinks."

"Well, what do you think about it?" said I.

"What do I think? I think it is a little of all these reasons, and a few more besides—one of which is, that they are a careless set of fellows."

I do not wish to detail to you, Mr. Editor, all the conversation we had, though he told me some very curious things. He told me at parting, that he wished the Council would do their duty, and let him go North, as he had no disposition to stay here. I was a little offended several times at the disrespectful manner in which he spoke of our Council; but, as he said, *que voules vous, mon cher?* It was the truth, and I had to admit it.

OLD RESIDENT.

COME HOME, DEAR WANDERER, COME HOME.

BY B. B. GARRISON.

In New Orleans *Times-Democrat.*

O wanderer, dear wanderer, come back home again,
In cold snowy lands why roam?
The scare has abated, the fever has fled,
O wanderer, dear wanderer, come home.
The plum is in blossom, the violet too,
And sweet is the chrysanthemum;
All danger is past. O take the first train,
Come home and make things hum.

Come home, come home, and a few shekels bring,
O why will ye linger away?
Come home, come home, is the song that I sing,
Come home, dear wanderer, to stay.

O wanderer, dear wanderer, come back home again,
In cold snowy lands why stray?
The panic has vanished and John Guiteras
Is safe in Philadelphia, Pa.
No longer are we hemmed in from the world,
And freight is dispatched as of yore,
We are waiting to extend the glad hand to thee,
Come back, dear wanderer, once more.

Come home, come home, and a few shekels bring,
O why will ye linger away?
Come home, come home, is the song that I sing,
Come home, dear wanderer, to stay.

MORTALITY AND MORBILITY REPORTS AND REVIEWS.

Correspondents under this head are particularly requested to be as prompt as possible.

HEALTH OF THE NAVY.

Report of the Surgeon-General, Chief of the Bureau of Medicine and Surgery, on the operations of the Bureau for the fiscal year ending June 30, 1896, estimates for the fiscal year ending June 30, 1899, and statistical report showing the health of the Navy for the year 1896. The report embraces a statement of the condition of the naval hospital fund, the naval medical establishment, and other matters of interest pertaining to the duties of the Bureau of Medicine and Surgery.

The naval hospitals, generally, have been overhauled, remodeled, and added to, approximating, more or less, a standard of excellence commensurate with modern methods, appliances and conveniences. The navy yards have also been improved to a considerable extent, but that of Boston is so imperfectly drained and sewered as to be a menace to health.

The Medical Corps continues to be unfilled—because of its unattractiveness. During the fiscal year ending June 30, 1897, the department received 275 applications for information as to conditions of appointment. Of that number 36 candidates appeared before the examining board, of whom nine were found physically and professionally qualified for admission as assistant surgeons. The number of vacancies have increased until there are now (at the date of this report) fifteen, "nor does there appear to be any immediate prospect toward filling the corps." The prospect evidently depends upon an improved status of the assistant surgeons, placing them on a similar footing with regard to quarters, rank and pay, with the army.

The health record of the Navy and Marine Corps for the calendar year 1896 has been relatively very satisfactory. When compared with the previous year, there has been a considerable decrease in the admission rate and also a marked diminution in the number of deaths, though the force has been increased 7.62 per cent. The average strength of the active list for the year 1896 was 14,196. Complete returns were received by the Medical Department from a total force of 13,768, the difference representing those from whom no returns were received except reports of survey and certificates of death.

The total number of admissions for disease and injury was 10,708, which is in the ratio of 777.75 per 1,000 of strength, being a decrease, compared with the previous year, of 60.78 per 1,000. The ratio for disease was 628.42 and for injury 149.33. The ratios for the previous year were 838.53, 673.19, and 165.34, respectively.

The daily average of patients was 409.03, a ratio of 29.71 per 1,000, while that for the previous year was 34.27, a decrease of 4.56 per 1,000. The number of persons invalided from service (including retirements of officers for disability and transfers to Government Hospital for the Insane) was 244, a ratio of 17.19 per 1,000 of force. Two hundred and eight cases were invalided for disease and 36 on account of injuries, the ratios being, respectively, 14.65 and 2.54. This is a slight increase over the previous year, for which the total ratio was 15.61, that for disease having been 13.34 and for injuries 2.27.

The total number of sick days was 149,706, which is an average of 10.87 days for each man of the Navy and Marine Corps and 13.98 days for each case treated. The averages for the previous year were 12.51 and 14.92 days, respectively. It appears that, compared with the previous year, there was not only a smaller admission rate, but that with an increased force the total number of sick days was much less.

The number of deaths was 78 (64 from disease and 14 from injury, including poison). The death rate was 5.49 per 1,000 of strength (4.51 for disease and .98 for injury). With a smaller force, the number of deaths for the previous year was 90 (70 for disease and 20 for injuries), the death rate having been 6.82 (5.31 for disease and 1.51 for injury). The decrease in the death rate for 1896 was therefore 1.33 per 1,000.

During the year there were admitted to the sick list of the total force 850 cases of malarial diseases, 593 of wounds, 586 of rheumatic affections, 468 of diarrhoeal affections, 400 of epidemic catarrh, 201 of alcoholism, 66 of pneumonia, 59 of heat stroke, 56 of typhoid fever, 48 of pneumonic tuberculosis, 31 of mumps, 16 of nephritis, 15 of measles, 14 of organic heart disease, 11 of erysipelas, 5 each of cholera and smallpox, 4 of scarlet fever, and 2 of varicella.

No case of yellow fever appeared during the year. There were admitted to the sick list 335 cases of gonorrhoea, 199 of secondary and 40 of primary syphilis, and 131 of chancroid—a somewhat smaller number than in the previous year, though the total force was considerably greater. There were 593 cases of wounds, 440 of

contusion, 404 of sprain, 132 of fracture, 93 of burn, 50 of hernia, 42 of abrasion, 24 of luxation, 17 of concussion, and 10 of drowning.

The deaths in the total force were due—11 to pneumonia, 10 to typhoid fever, 8 each to drowning and apoplexy, 5 to pneumonic tuberculosis, 4 to nephritis, 3 each to alcoholism and aneurism, 2 each to pernicious anaemia, angina pectoris, and broncho-pneumonia, and 1 each to asphyxia (coal gas), carcinoma, chronic intestinal catarrh, cholera, cholera morbus, valvular heart disease, chronic dysentery, epithelioma, erysipelas cerebro-spinal fever, chronic hepatitis, spinal luxation, intestinal obstruction, osteoma, heat prostration, syphilis, acute miliary tuberculosis, septicaemia, gunshot wound (suicide), and cause undetermined.

The deaths by violence and suicide were as follows: Drowning 8, and asphyxia from coal gas, spinal luxation, and suicide by shooting, 1 each.

During the year 8,935 persons were vaccinated and the results were determined in 6,958 cases, in which the percentage of success was 25.37. Of these, 6,588 had marks of previous vaccinations and furnished 1,265 successful results. Of those vaccinated, 1,977 passed from the observation of medical officers by transfer.

The average number of patients daily under treatment in the various naval hospitals was 194.84, a ratio of 14.15 per 1,000 of force. During the previous year the daily average was 214.63 and the ratio per 1,000 of force 16.94. The average number of days' treatment per case was 47.57 for 1896 and 53.32 for 1895. The deaths numbered 33 and the invalided from service 170, the ratio per 1,000 of cases treated being 22.01 for the former and 113.41 for the latter. The ratios for the previous year were 25.18 and 81.69, respectively.

Insane.—The number of patients from the Navy and Marine Corps remaining in the Government Hospital for the Insane on June 30, 1896, was 79. During the following year 21 cases were admitted and 20 discharged, 8 as recovered, 1 improved, and 11 dead. On June 30, 1897, 80 (8 officers and 72 seamen and marines) remained in that institution.

Force Afloat.—The average strength of the force afloat during the year 1896 was 10,859. The average number of admissions to the sick list per man on the cruising vessels of the North Atlantic squadron was 0.77; on those of the Pacific Station, 0.68; in the South Atlantic squadron, 0.86; in the European squadron, 0.83; in the Asiatic squadron, 0.75; on the Northwestern Lakes, 0.41

and on the receiving ships, 0.72. The ratios for the previous year were 0.99, 0.75, 0.93, 0.83, 0.78, 0.35, and 0.62, respectively.

The admissions for parasites and parasitic diseases were in the ratio of 2.21 per 1,000 (previous year, 2.19); general infectious diseases (non-venereal), 128.46 (previous year, 156.34); constitutional disorders of nutrition, 3.59 (previous year, 3.39); diseases of the nervous system, 66.40 (previous year, 66.72); of the visual apparatus, 9.95 (previous year, 9.56); of the auditory apparatus, 5.16 (previous year, 6.07); of the digestive apparatus, 119.90 (previous year, 129.95); of the circulatory apparatus, 7.18 (previous year, 6.77); of the respiratory apparatus, 60.23 (previous year, 72.79); of the motory apparatus, 34.07 (previous year, 36.15), and of the cutaneous apparatus, 57.28 (previous year, 62.64). The venereal diseases and diseases of the genito-urinary apparatus were in the ratio of 98.44 per 1,000 (previous year, 109.04); cysts and new growths, 1.47 (previous year, 1.39); extraneous bodies, 0.83 (previous year, 0.40); poisons (including alcoholism), 17.59 (previous year, 18.22), and feigned diseases, 0.18 (previous year, 0.40).

The deaths numbered 53.29 occurring afloat and 24 in hospital, which is in the ratio of 4.88 per 1,000 of force (2.67 afloat and 2.21 in hospital). The death rate for the previous year was 5.77 (3.68 afloat and 2.09 in hospital).

The number invalided from service was 186 (45 from ships and 141 from hospital), the ratio per 1,000 of force being 17.12, and the number transferred to hospital was 884, a ratio of 81.41 per 1,000.

On the Northwestern Lakes there was one vessel, a cruiser, employed during the year. The average complement was 93 and the total number of admissions to the sick list was 38, a ratio of 408.60 per 1,000 of force. The ratio for the previous year was 354.84. There were no deaths, as was also the case in the previous year.

Receiving Ships, five vessels, with a mean complement during the year of 1,087. The total number of admissions to the sick list was 788, a ratio of 724.93 per 1,000, and the daily average of patients was 11.46. The admission rate per 1,000 of strength was 624.90 for the previous year.

The number invalided from service was 14, a ratio of 12.88 per 1,000 of strength, and the number of deaths was 7 (5 occurring afloat and 2 in hospital), the death rate being 6.44. These ratios for the previous year were 14.88 and 12.53, respectively.

The number transferred to hospital was 160, being in the ratio

of 147.19 per 1,000 of force and of 203.05 per 1,000 of admissions. These ratios for the previous year were 115.11 and 184.44, respectively.

The various navy-yards and other shore stations had a mean force during the year of 2,665. The total number of admissions to the sick list was 2,422, a ratio of 908.82 per 1,000. The ratio for the previous year was 866.38.

The number invalided from service was 54 (14 from stations and 40 from hospitals), a ratio of 20.26 per 1,000; and the number of deaths was 21 (8 occurring in hospital), the death rate being 7.88 per 1,000. The ratios for the previous year were 23.26 and 12.26, respectively.

The number transferred to hospital was 359, a ratio of 134.71 per 1,000 of force and 148.22 per 1,000 of admissions. The ratios for the previous year were 132.35 and 152.76, respectively.

Statistical tables follow, giving in detail the data, respectively, of all the stations, yards, hospitals, and ships; and after these, special reports by the officers of hospitals, ships, and stations; of delegates to conventions and congresses, and some on special subjects—"Li roche," Cholera in Japan, Plague in China, etc. Some of which reports we shall endeavor to make room for hereafter.

ALABAMA.—W. H. Sanders, M. D., State Health Officer, Montgomery.

Mobile, 37,817. J. A. Abrahams, M. D., Health Officer.

Nov. 27.—Yellow fever to this date: Cases, 363; deaths, 48.

CALIFORNIA.—C. A. Ruggles, M. D., President, Stockton; W. P. Matthews, M. D., Secretary, Sacramento.

San Francisco, 360,000. Report for October: Deaths, 405—90 under 5 years of age. From consumption, 67; acute pulmonary diseases, 58; from zymotic diseases, 48; diphtheria (and croup), 17; typhoid fever, 5. Annual death rate, 16.4. Contagious diseases reported during the month: Diphtheria, 39; scarlatina, 7.

Los Angeles, 103,000. Report for October: Deaths, 116. From phthisis, 17; acute pulmonary diseases, 7. Annual death rate, 13.63. "N. B.—Of the 17 deaths from pulmonary consumption, 11 had lived here less than 10 years."

COLORADO.—Denver, 160,000. William P. Munn, M. D., Health Commissioner, reports for October: Deaths, 167. Of

these 48 were caused by consumption, 34 contracted elsewhere; 7 by acute pulmonary diseases. Annual death rate, 12.52 (excluding phthisis contracted elsewhere), 9.98.

Colorado Springs—20,000. B. B. Glover, M. D., Health Officer, reports for November, 22 deaths, of which 3 were under five years of age. Annual death rate, 13.2 per 1,000. From typhoid fever, there was 1 death; from pneumonia, 8; from tuberculosis, 7.

CONNECTICUT.—Professor William H. Brewer, Ph.D., New Haven, President; Prof. C. S. Lindsley, M. D., Secretary, New Haven. The Secretary's bulletin for November comprises returns from 168 towns, representing a population of 883,192. There were 1,053 deaths reported during the month; 44 less than in October; 70 more than in November of last year, and 47 more than the average number of deaths in November for the five years preceding the present. Deaths under five years of age, 245.

The death rate was 13.8 for the large towns; for the small towns 15.7, and for the whole State 14.3. Deaths from zymotic diseases, 112, being 10.6 per cent. of the total mortality. From diphtheria, 45; typhoid fever, 10; whooping cough, 5; scarlatina, 3; malarial fever, 11; consumption, 111; pneumonia, 94.

DISTRICT OF COLUMBIA, 276,963—88,176 colored.—Wm. C. Woodward, M. D., Health Officer, reports the mortality for four weeks ending November 27, 416. Of the decedents, 243 were white and 173 colored, the death rate being 16.1 for the white, 24.3 for the colored, and 20.2 for the whole population. The principal causes of death were: Zymotic diseases, 46; constitutional, 96; 53 were from consumption and 34 were from pneumonia. Of the zymotic class there were 18 fatal cases of diphtheria, 7 of typhoid fever, and 2 of whooping cough.

ILLINOIS.—L. Adelsberger, M. D., President, Waterloo; J. A. Egan, M. D., Secretary, Springfield.

Chicago, 1,619,226. A. R. Reynolds, M. D., Commissioner. Biennial Report, 1895 and 1896. Failure to publish a report of the department for the year 1895—the reason assigned being want of an appropriation therefor—has made it necessary to combine the reports of the two years, 1895-1896, in one volume.

Antitoxin Treatment of Diphtheria.—In August, 1895, the increasing deaths from diphtheria led to the establishment of a

number of antitoxin stations for the convenience of physicians who desired to use the serum and to secure bacterial diagnosis of their cases. It was not, however, until October 5 that the first vial of serum was called for from a station, and, meanwhile, the diphtheria deaths continued to increase rapidly. Every available medical officer of the department was assigned to duty as an antitoxin administrator. By the close of March, 1896, the epidemic was substantially at an end. Total number of diphtheria cases visited from October 5, 1895, to March, 31, 1896, 2,634; cases found to be diphtheria, 1,771; total number treated with antitoxin, 1,658; refused antitoxin, 113. Total number bacterially verified diphtheria, 1,468; of these, 1,374 recovered, 94 died—6.40 per cent. Besides there were 1,423 individuals—children and others—who had been exposed to the disease treated with immunizing doses of antitoxin; nine of whom were subsequently attacked with diphtheria, but all recovered. Of another summary, October 5, 1895, to January 10, 1896: Verified cases, 1,108; treated with antitoxin, 1047; recovered, 961; deaths, 86—8.21 per cent.; treated without antitoxin, 61; died, 32—52.46 per cent.

Gross figures of the work performed up to the close of 1896 ·1896 from the beginning of the antitoxin treatment, October 5, 1895, and the results:

Total number of cases of reported diphtheria visited by the department physicians, 2,981; found to be diphtheria, 2,436; number in which antitoxin was allowed to be used, 2,302; total number of antitoxin-treated recovered, 2,146; total number of antitoxin-treated died, 151. Death rate under antitoxin treatment, 6.56 per cent.

Experience shows that the average mortality of diphtheria previous to the introduction of antitoxin was about 35 per cent. of all cases—30 per cent. in hospitals and 40 per cent. in private practice. At this rate (35 per cent.) there would have been 806 deaths among the 2,302 cases had not antitoxin been used.

Total number of exposed persons immunized, 2,016; total number of these subsequently attacked with diphtheria, 14.

Experience shows that fully one-half of those exposed, under the conditions which obtained in these 2,016 cases, would have been attacked with diphtheria; and of those attacked 352, or 35 per cent. of the 1,008, would have died if not treated with the antitoxin. Only 14 out of the 2,016 exposed were attacked and none died.

It is well within bounds to claim a direct saving of at least 1,200

lives through the introduction and use of antitoxin in diphtheria by the Chicago Health Department during the last fifteen months.

Other reports on special subjects, particularly on the water supply, and Regulation of the Practice of Medicines, by F. W. Reilly, Assistant Commissioner (to whom, by the way, the credit of this biennial report, throughout, is justly awarded, by Commissioner Reynolds), are important contributions to the interest of the report.

Total deaths reported from all causes, in 1895, 24,219; under five years, 3,457. Principal causes: Tubercular diseases, 2,463; pneumonia, 2,359; diarrhoeal diseases, 1,638; diphtheria, 1,420; heart diseases, 1,306; brain diseases, 1,260; bronchitis, 1,133; convulsions, 1,113; infantile marasmus, 797; kidney diseases, 701; cancer, 682; typhoid fever, 518. Annual death rate per 1,000, 15.14.

In 1896, 23,257; under five years, 3,135. Principal causes: Tubercular diseases, 2,667; pneumonia, 2,141; diarrhoeal diseases, 1,465; heart diseases, 1,231; brain diseases, 1,200; bronchitis, 1,165; convulsions, 939; typhoid fever, 751; cancer, 734; infantile marasmus, 722; kidney diseases, 718. Annual death rate per 1,000, 14.44.

INDIANA.—H. Jamerson, M. D., President, Indianapolis; J. N. Hurty, M. D., Ph. D., Secretary, Indianapolis.

IOWA.—E. H. Carter, M. D., President, Des Moines; J. F. Kennedy, M. D., Secretary, Des Moines.

The State Board Bulletin for November, reports since preceding: Diphtheria, 22 localities; scarlatina in 16.

Davenport, 35,000. W. L. Allen, M. D., Physician to Board of Health, reports for October 40 deaths—8 under five years of age. Zymotic diseases caused 4 deaths; consumption, 4.

KANSAS.—E. M. Hoover, M. D., President, Halstead; H. Z. Gill, M. D., LL. D., Secretary, Pittsburg.

LOUISIANA.—R. S. Oliphant, President, New Orleans; G. F. Patton, M. D., Secretary, New Orleans.

New Orleans, 275,000—80,000 colored.—Yellow fever Cases reported, September 8 to December 4, 1897, with 285 deaths.

MAINE.—C. D. Smith, M. D., President, Portland; A. G. Young, M. D., Secretary, Augusta.

Annual report of vital statistics for the year 1895.—The number of deaths compared with the three years preceding indicates marked progress in the saving of life.

The population of the State in 1890, was, as given by the eleventh census, 661,086. In 1880, the population of the State was 648,936. There was, therefore, a gain of 12,150 in the decade between the last two census enumerations, yet, with an increasing population, in 1892, the number of deaths was 12,147; in 1893, 11,134; in 1894, 11,012, and 1895, 10,464. The death rate for the four years, respectively, was 18.37, 16.84, 16.66 and 15.83. There were, therefore, in 1895, 548 fewer deaths than in 1894, 670 fewer than in 1893, and 1,683 fewer than in 1892.

The number of births registered in 1895 is larger than that in any previous year,—it was larger than that of the preceding year by 822, while the birth-rate was 22.33 as compared with 21.09 in 1894. In the three years 1892-94, the greatest variation in any one year from the average number for those three years was only 111.

The marriage-rate of the State has varied but little in the four years 1892-95. It has been, respectively, 8.56, 8.76, 8.46, and 8.67.

The number of divorces decreed in 1895 was 681, which, in proportion to the number of marriages solemnized during the same year, is larger than in any of the other New England States.

MARYLAND.—John Morris, M. D., President, Baltimore; John S. Fulton, M. D., Secretary, Baltimore.

Baltimore, 506,398—73,344 colored.—James F. McShane, M. D., Health Commissioner, reports for October. The weather: The mean barometric pressure during October was 30.14 inches; mean temperature 58°; total precipitation 3.67 inches, an excess in precipitation during the month of 0.74 inches; prevailing direction of wind North.

Deaths reported, 692; 187 less than for the corresponding month of October, 1896. Of these 547 were whites and 145 colored; a death rate of 15.22 per thousand for the former and 23.20 per 1,000 for the latter. The death rate per 1,000 for the whole population was 16.41. 95 died from infectious diseases, 76 from consumption, 34 from pneumonia, 27 from typhoid fever. 247 or 35.69 per cent. were children under five years of age.

Cases of infectious diseases reported during the month were 408, an increase of 169 compared with the preceding month. 107 deaths occurred in public institutions, of which 38 were reported as non-residents.

MASSACHUSETTS.—H. P. Walcott, M. D., Chairman, Cambridge; S. W. Abbott, M. D., Secretary, Boston.

The Twenty-eighth Annual Report of the State Board for the year ending September 30, 1896, and that which relates to water supply and sewerage for the year 1896, pp. 986. It comprehends: 1. Reports upon the improvement of Charles River; the sewerage of Salem and Peabody; the sanitary condition and improvement of the Neponset Meadows. 2. Water supplies and sewerage,—examinations, experiments, purification, filtration, etc. 3. Reports upon food and drug inspection. 4. A comparative study of the toxin production of diphtheria bacilli, by Theobald Smith and E. L. Walker. 5. Production and use of antitoxin. 6. Diphtheria cultures. 7. Diagnosis of malaria. 8. Examinations for tuberculosis. 9. Vital statistics of Massachusetts (1856-1895), by the Secretary of the Board. 10. Statistical summaries of disease and mortality. 11. Health of towns. Under these subject-titles is given in detail the progress of practical sanitation by the best methods applicable to the several subjects reported upon with special reference to the well-being of the people of Massachusetts, but replete with knowledge of practical importance to the people of other States and localities. Under section 9 is summed up the vital statistics for the period of forty years, with a glance at earlier years when statistics were less complete and proportionally unreliable.

During these forty years (1856-1895) the population of the State has more than doubled, the increase from the census of 1855 to that of 1895 amounting to 1,367,814; but of this number nearly two-thirds, or 904,395, consists of immigrants from other States and countries, the excess of births over deaths in these forty years being only 463,419. The growth of population, therefore, in the past forty years may be said to consist of the excess of births over deaths, and the migration in the ratio of about one of the former to two of the latter. The census also shows that the relative numbers of the population at ages under 20 have diminished during this period, while those above 30 have increased; also that the foreign population has increased from a percentage of 16.49 in 1850 to 30.59 in 1895.

The excess of females in Massachusetts has long been a matter of comment. The first census taken in 1765 showed 109,747 females to 105,042 males, the settlement then being 145 years old. During the revolutionary war, as well as during the great

civil war, the females gained fast, the greatest excess of females over males in the State being in 1865, when the ratio was 1,105 to 1,000. Since then the proportion of the sexes has fluctuated, but the census of 1895 shows 1,000 males to 1,058 females, which puts the sexes nearer to an equality than they have been since 1850.

The falling off, too, of the native birth rate is considered a serious matter. It is largely since the civil war that this feature in the vital statistics has developed, and it is steadily becoming more marked.

Another serious feature in the vital statistics of the State is the falling off of the excess of births over deaths. From 1851 to 1860 this excess ranged from 9.55 to 11.99 per cent. In 1861 it was 9.17, and in 1862 it was 7.47. It was 2.05 in 1863 and 1.35 in 1864. In this last year the deaths and births approached nearer an equality than in any other year in the 277 years of the existence of Massachusetts. Since then the excess of births over deaths has exceeded 8 per cent. in only one year, 1874, until 1894. With the exception of that one year, the excess ranged from 4.82 per cent. in 1882 to 7.79 in 1891. In 1894 it was 8.24. In 1895 it again declined, being only 8.01.

The marriage rate meanwhile fluctuated. The marriage rate per 1,000 of population ranged from 17.36 to 22.14 in the ten years between 1856 and 1866. From 1866 to 1895 it ranged from 14.91 to 20.92. But the constant fact to be noted is that the birth rates of foreign and native population show a steady excess of foreign over native fecundity.

Moreover, the death rates of native and foreign inhabitants show that the foreigners not only have more children than the natives, but outlive them. The average death rate of the natives in eight years has been 20.4, and of the foreigners 17.4 to the thousand. Yet the death rate has maintained a fairly uniform course through the forty years under consideration, comparing ten-year or even five-year periods; while if we take twenty-year periods, it is seen that the rate for 1856-75 was 19.49, and that for 1876-95 was 19.51 per 1,000. Considering the increase in density of population, the number having more than doubled during the period, this uniformity is remarkable. But it does not imply a like uniformity in the factors which produce it; indeed, these show a great variation, and it is in respect to this that the effect of the work of public sanitation becomes apparent. In general it may be said that infectious diseases, including consumption, have diminished, while diseases of the brain and of the nervous, respiratory and circulatory organs

have increased. In this way the balance of the death rates for the two periods has been preserved.

Infectious diseases are preventable diseases; and while consumption has only recently been included in this class, the proportional decrease of its ravages is one of the most distinguishing features of Dr. Abbott's tables. It still heads the list as the most destructive cause of death, a position which it has maintained from the first; but while in 1856 the deaths from consumption were nearly four times as many as those of the next cause on the list, in 1895 the excess was little more than 5 per cent. Broadening the range of comparison to include with consumption other infectious diseases, measles, scarlet fever, diphtheria and croup and typhoid fever, it is seen that the deaths from these causes, as related to the total mortality, have diminished in percentage from 28.4 to 19.7 in forty years; while the percentage of deaths from pneumonia, apoplexy and paralysis, and diseases of the heart and kidneys has increased from 17 to 26.3. Dropping relative percentages and considering the twenty-year periods, it appears that on the average during the first twenty years people died of infectious diseases at the rate of 83.5 per 10,000, while in the next twenty years the average was reduced to 60.4 per 10,000. On the other hand, heart, brain and kidney diseases claimed only 36.6 per 10,000 on the average of the first twenty years, increasing to 59.6 per 10,000 in the later period.

Unquestionably, improved sanitation is to be credited with the decreased rate of mortality from infectious diseases. This is especially noticeable in regard to typhoid fever. Mortality from this cause decreases as the public water supply increases. Thus while in 1856 only eleven cities and towns were supplied with public water, the percentage of deaths from typhoid was 4.63; and in 1895, when 154 towns, including nearly 20 per cent. of the population of the State, had a public water supply, the percentage of deaths from this cause was reduced to 1.43. If this were all, it would be a triumph of sanitary science; but similar effects are observable in other directions, telling of the advance which has been made in caring for the public health.

Boston, 516,305. Samuel H. Durgin, M. D., Chairman of Board of Health.

During the month of October there were 871 deaths, of which number 285 were under five years of age. Annual death rate, 20.24 per 1,000. Deaths from diphtheria (and croup), 25; scarlatina, 3; typhoid fever, 22; cerebro-spinal meningitis, 6; consumption, 114.

Cases reported: Diphtheria, 206; scarlatina, 120; measles, 21; typhoid fever, 106.

Annual report for 1896 (February 1, 1896, to February 1, 1897): Deaths, 11,634—305 more than for the previous year; under five years of age, 4,055; death rate, 22.53—.07 less than for the previous year, and the lowest since 1889. Deaths from zymotic diseases, 1,985—17 more than for the previous year, but from diphtheria there were 72 less, the total number from this cause was 516; the ratio of mortality from it was 11.49 per cent. as against 14.49 per cent. the previous year. From typhoid fever, 162; from scarlatina, 121; measles, 27. Deaths from pneumonia, 1,387; consumption, 1,328; bronchitis, 375. House to house inspection during the year resulted in an order to vacate 121 houses because of their unsanitary condition; but a large per cent. of them were put in a satisfactory condition before the expiration of the time allowed the occupants to quit the premises, and in such cases the orders were not enforced.

Disinfection with *formaldehyde gas* has been pursued with such marked success as well-nigh to supersede the use of sulphur, by reason of its greater efficacy and its less objectionable features as an agent to be used in dwelling-houses.

Medical inspection of schools during the year. 8,964 pupils examined; of whom 1,156 were found to be too ill to remain in school; 267 were afflicted with infectious diseases; 3,934 oral and respiratory diseases; 66 ear diseases; 382 eye diseases; 628 skin diseases; 3,687 miscellaneous diseases.

Public Baths. There were eighteen bath-houses in operation during the year, and were used—those for men and boys, by 611,894; for women and girls, 189,341. 801,235 against 786,825 during the preceding year.

Milk inspection comprehended 257 complaints, on which there were 232 convictions. The amounts paid in fines was $5,810.

MICHIGAN.—Hon. Frank Wells, President, Lansing; Henry B. Baker, M.D., Secretary, Lansing.

The Secretary reports for the month of November, 1897, compared with the preceding month, pneumonia and inflammation of kidney increased, and diarrhoea decreased in area of prevalence.

For the month of November, 1897, compared with the average for November in the eleven years, 1886-1896, consumption, remittent fever, typhoid fever, intermittent fever, pneumonia and erysipelas were less prevalent.

Including reports by regular observers and others, consumption was reported present in Michigan in the month of November, 1897, at 172 places; typhoid fever at 111 places; diphtheria at 66 places; scarlet fever at 57 places; measles at 37 places; whooping-cough at 18 places, and small-pox at 1 place.

Reports from all sources show consumption reported at 2 places less; typhoid fever at 6 places less; diphtheria at 8 places more; scarlet fever at 1 place more; measles at 9 places more; whooping-cough at 7 places more, and small-pox at the same number of places, in the month of November, 1897, than in the preceding month.

Mortality for the month (Bulletin of Vital Statistics) was 1,985, as compared with 2,346 for October and 2,370 for September. The death rate for the month was 11.1 per 1,000 population, as compared with 12.8 in October and 13.4 in September. Fewer deaths were reported from typhoid fever, diphtheria and croup, scarlet fever, whooping-cough, diarrhoeal diseases of children and cerebro-spinal meningitis. Only 414 deaths occurred of children under five years of age as compared with 701 in October. On the other hand, the deaths from consumption increased from 165 to 197, pneumonia from 89 to 146, and measles from 1 to 7.

The weather conditions during November, 1897, do not show much divergence from normal or average conditions. The mean temperature for the State was 33.9 degrees, or 1.2 degrees lower than the normal; this deficiency did not prevail in all portions of the State, however; in the upper peninsula and central counties the average temperature was less than the normal, while in the northern and southern counties of the lower peninsula there was a slight general excess. During the past ten years the coldest November was that of 1894, when the mean monthly temperature was 32.0 degrees. During the same period the warmest November was that of 1890, with a mean temperature of 38.0 degrees. Last year the mean November temperature was 35.6 degrees. It is also worthy of note that the first cold wave which visited the State during this year did not reach us until November 22, which is much later than in most former years. The highest temperature was 69 degrees; it occurred at Mt. Clemens on the 1st. The lowest temperature was 11 degrees below zero, at Iron River, Iron County, on November 27.

The precipitation as a whole was nearly normal but unevenly distributed; there was a decided excess over the southern counties, but deficiencies occurred over all other sections.

Detroit, 275,000. S. P. Duffield, M. D., Health Officer, reports for October: Total mortality, 318; 128 under five years of age. Annual death rate per 1,000, 13.61. Consumption, 15; pneumonia, 14; diphtheria, 26; scarlatina, 2. Cases reported: Diphtheria, 114; scarlatina, 49.

Coldwater, 5,286. Dr. T. J. Turner, Health Officer, has made an urgent report (Coldwater Reporter, December 1.) on the necessity of paving the city. "The streets remain in very much the same condition as they were over a half century ago. In season and out of season, far exceeding the memory of the oldest pioneer, the streets have presented dust and filth for one-half the year, mud and filth the other half.

"The average rainfall is estimated at 50 inches per annum. Now, according to Latham's tables the fall of one inch of rain represents 22,622 gallons upon each acre, so that in one year this rainfall equals 1,131,100 gallons per acre. To which must be added the constant improvident inundation from the water taps made necessary to lay the dust arising from the dried mud during our summer droughts. This enormous quantity of water sinks into the soil, washing out the soluble parts of the refuse placed upon it, leaving the insoluble residues as I have mentioned in a previous paper to the slow chemistry of the so-called 'elements.'

"We live on a damp soil, and it is just here well to call attention to the fact that with a damp soil you have a disease-movement that furnishes about 1-7 of the total deaths of the population; a disease that can be restricted and its mortality diminished by sanitary measures—pulmonary consumption. This association of a wet soil with consumption is a well-determined fact in sanitary science.

"Again, unclean streets and dirty alleys may generate apart from polluted water some cases of typhoid fever, but the disease germs which are developed and spread by such streets and alleys are those of other diseases as much to be dreaded as typhoid fever. Thus the occurrence of the much-feared diphtheria will in the maximum of instances be found to be associated with dirty streets and filthy surroundings. All filth diseases, in fact, have a close connection, if not an actual aid in causation as the name implies with such surroundings, for filth is a prominent condition under which these diseases become prevalent.

"As to the material and method of paving. My preference after examination of our area, etc., is for the macadamization upon a solid, unyielding, large stone foundation of all the roadways. But

I do not place this opinion in opposition to whatever plan that may be presented in the future, being ready to abandon it as soon as any other practical method may be determined upon which shall secure all that is desired."

MINNESOTA.—Franklin Staples, M. D., President, Winona; H. M. Bracken, M. D., Secretary, St. Paul.

At the meeting of the State Board, October 12, T. Westbrook, Director of the Bacteriological Laboratory, reported that there had been made at the laboratory during July, August and September 730 examinations of the dried blood of patients supposed to be suffering from typhoid fever. Of these 695 have come from Minneapolis, 165 in July, 273 in August and 256 in September. The remaining 35 have come from ten other points in the State.

A synopsis of the diphtheria examinations shows a total of 515 for the same three months.. Of these Minneapolis has furnished 30, 33 and 45 for the respective months, or a total of 109, and the State school at Owatonna 131, 99 and 125, or a total of 355. The remaining cases have come from twenty-two points of wide distribution. Dr. Westbrook noted that the usual autumnal increase in this disease had begun. He urged that bacteriological examinations be made the uniform criterion throughout the State for the establishment and maintenance of quarantine in diphtheria.

Minneapolis, 225,602. H. N. Avery, M. D., Commissioner, reports for September: Deaths, 150; 54 under five years of age. Deaths: Consumption, 19; typhoid fever, 9. Annual death rate, 8.05.

St. Paul, 215,582. A. J. Stone, M. D., Commissioner. Mortality for October: 116; 36 under five years of age. Deaths from diphtheria, 10; consumption, 13; pneumonia, 6. Annual death rate, 6.47.

MISSISSIPPI.—The Times-Democrat has published a letter from Dr. H. H. Haralson, of the Mississippi State Board of Health, asserting in the most positive manner that he *knows* that the yellow fever was communicated to Ocean Springs and Biloxi from the quarantine on Ship Island. In verification of his statement he cites reports of the first suspicious cases in Biloxi, "some time in July," and takes no notice of cases reported to have occurred in Ocean Springs early in June—at first called dengue—but about the last of June recognized as yellow fever. Whether it—the dengue—was the same fever is not yet determined.

MISSOURI.—F. J. Lutz, M. D., President, St. Louis; Paul Paquin, M. D., Secretary, St. Louis.

St. Louis, 600,000—35,000 colored. M. C. Starkloff, M. D., Commissioner of Health, reports for October: Deaths, 702; 209 under five years of age; from zymotic diseases, 129; diphtheria, 32; whooping-cough, 5; typhoid fever, 17; phthisis, 78; pneumonia, 44. Annual death rate, 14.0.

Kansas City, 175,000. E. Von Ouast, M. D., Health Officer, reports for October: Deaths, 132; 29 under five years of age. Deaths from typhoid fever, 8; phthisis, 8; tuberculosis, 6; pneumonia, 7. Annual death rate, 9.05.

NEW JERSEY.—C. F. Brackett, M. D., President, Princeton; Henry Mitchell, M. D., Secretary, Asbury Park.

Paterson, 108,268. J. L. Leal, M. D., Health Officer, reports for October: 133 deaths; 39 under five years of age. Annual death rate, 12.2. Deaths from diphtheria, 9; consumption 19; pneumonia, 15.

The recent prevalence of typhoid fever in Paterson has been pretty certainly traced to a creamery in Branchville. Dr. Leal reports that of the 109 cases reported to the board since November 15 last, 70 are directly connected with the milk or cream from the Branchville creamery. Some of the cases, not shown to be connected, have not been investigated at all; some have not been completed. Undoubtedly further effort will connect many more.

Of the 70 cases connected, 56 are connected directly by milk or cream from the infected creamery; 11 are connected through ice cream made with the infected milk and cream, and 3 are connected through cream from infected creamery used in soda water. An interesting fact in connection with this matter is the illness with typhoid of eight members of the families or employés of the handlers of the milk in this city. The milk was shipped to Dover, Morristown, Newark, Jersey City and New York, as well as to Paterson.

Newark, 230,000. Health Officer Chandler reports for the five weeks ending November 27: Deaths, 271; 81 under five years of age; from diphtheria, 9; consumption, 41; pneumonia, 29; other respiratory diseases, 12. Annual death rate, 15.06.

Hudson County (Jersey City and vicinity), 355,231.—W. W. Varick, M. D., President.

NEW YORK.—Daniel Lewis, M. D., President, New York; B. T. Smelzer, M. D., Secretary, Albany.

The Secretary's bulletin for October reported that there were 9,080 deaths from all causes during the month; this is 500 less than for the month preceding. Of the zymotic diseases, with the exception of diarrhoeal diseases, the mortality has been greater this month, the increase amounting to 20 per cent.; but the diarrhoeal mortality has decreased during the month considerably more than one-half, so that there is a saving of 700 deaths from this cause. The deaths from diphtheria have on the other hand increased from 260 to 370, and there is a small increase in typhoid fever and malarial diseases. In acute respiratory diseases there is an increase of 300 deaths during the month, and from consumption there were 75 more deaths.

Compared with the corresponding month of last year there were 400 more deaths this month. This increase was, among zymotic diseases, only in diarrhoea, which caused 100 more deaths than a year ago; there was the same increase in the mortality from consumption, from nervous diseases and from accidents. Compared with average mortality for October for ten years past there were 400 more deaths, but the increase is not in zymotic diseases, of all of which the indicated prevalence is less, but is in local diseases, and from accidents which caused an excessive number of deaths for the season. The death rate for the month was 16.75, that of September being 17.75 and that of October, 1896, 16.00. In the rural districts, where last month the diarrhoeal mortality was noted as excessive, it has continued this month to be fully equal to that of the rest of the State. The prevalence of typhoid fever is reported from 40 localities, scarlet fever from 35 and diphtheria from 50. The deficiency in rainfall has continued, the total for the month being less than one inch, or 2.50 inches below the normal, the humidity was low with mean barometer 30.15, there were fourteen clear days, the average temperature, 51°, was above the normal, and the direction of the prevailing winds very variable in different parts of the State.

New York City, 2.000,000. Report for October: Deaths, 3,088; 1,099 under five years of age. Death rate, 18.22. Zymotic diseases per 1,000 from all causes, 130.75; diphtheria, 85; typhoid fever, 40; cerebro-spinal fever, 16; consumption, 444; acute respiratory diseases, 444; diarrhoeal diseases, 155.

Brooklyn, 1,100,000. Report for October: Deaths, 1,615; 629

under five years. Death rate, 17.20. From zymotic diseases, per 1,000, from all causes, 136.10; diphtheria, 87; typhoid fever, 31; consumption, 187; acute respiratory diseases, 240; diarrhoeal diseases, 64.

Buffalo, 360,000. Report for October: Deaths, 356; 119 under five years. Death rate, 11.8. From diphtheria, 25; acute respiratory diseases, 42; consumption, 41; typhoid fever, 9.

Rochester, 170,000. Report for October: Deaths, 164; 27 under five years. Death rate, 10.2. From consumption, 13; acute respiratory diseases, 9.

Albany, 100,000. Report for October: Deaths, 138; 28 under five years. Death rate, 16.5. From typhoid fever, 6; diphtheria, 7; consumption, 18; acute lung diseases, 16.

Syracuse, 120,000. Report for October: Deaths, 131; 30 under five years of age. Death rate, 13.1. From diphtheria, 6; acute respiratory diseases, 12; consumption, 20; typhoid fever, 5.

NORTH CAROLINA.—George G. Thomas, M. D., President, Wilmington; Richard H. Lewis, M. D., Secretary, Raleigh.

The October Bulletin summarizes the mortality for September, from twenty-three towns, with an aggregate population of 127,394 —54,627 colored.

Total number of deaths, 191, of which 110 were of colored people and 52 under five years of age. Typhoid fever caused 16 deaths; malarial fever, 9; whooping-cough, 16; consumption, 26; pneumonia, 5; diarrhoeal diseases, 22. Annual death rates—whites, 13.3; colored, 24.2; total, 18.0.

Asheville, under the privileges of an act of the last Legislature, has organized a board of health. It is composed of the Mayor, the Chairman of the Finance Committee of the Board of Aldermen, the City Engineer, and four regular physicians. The board has designated from its members as Health Officer Dr. M. H. Fletcher.

OHIO.—S. P. Wise, M. D., President, Millersburg; C. O. Probst, M. D., Secretary, Columbus.

State Bulletin reports population 1,376,830. Cases of infectious diseases reported to the State Board of Health during four weeks ending November 27, 1897: Diphtheria, 324, deaths, 59; scarlatina, 190, deaths, 11; typhoid fever, 111, deaths, 26; whooping-cough, 38, deaths, 6; measles, 629, deaths, 2.

Cincinnati, 405,000. J. M. Withrow, M. D., Health Officer, reports for October: 431 deaths; 138 under five years of age.

Annual death rate, 13.06. From consumption, 41; pneumonia, 37; bronchitis, 22; zymotic diseases, 63; diphtheria, 20; typhoid fever, 9.

Cleveland, 350,000. J. L. Hess, M. D., Health Officer, reports for the month of October: Deaths, 414; 153 under five years. From diphtheria, 18; typhoid fever, 10; consumption, 14; tuberculosis, 15; pneumonia, 33; bronchitis, 9. Death rate, 14.19.

PENNSYLVANIA.—Pemberton Dudley, M. D., President, Philadelphia; Benjamin Lee, M. D., Secretary, Philadelphia.

Philadelphia, 1,214,256. Theodore B. Stulb, Health Officer, reports for the four weeks ending November 27: Deaths, 1,450; 417 under five years of age. From diphtheria, 123; typhoid fever, 21; consumption, 175; pneumonia, 135; scarlatina, 7. Annual death rate per 1,000, 15.5.

Pittsburg, 285,000. Report for the four weeks ending November 27: Deaths, 332; 132 under five years of age; typhoid fever, 10; consumption, 23; diphtheria, 14. Death rate, 14.9.

Annual report for 1896: The total number of deaths for the year was 4,907, which was 97 less than in the previous year, 1895. This number was less than in any year since 1889, since which time the area of the city has been extended by the incorporation of the Thirty-seventh ward in 1894. On the basis of an estimated population of 282,500 the death rate per 1,000 living was 17.3. 2,096—more than 42 per cent. of the deaths—were of children under five years of age.

Deaths from acute infectious diseases: Diphtheria (and croup), 183; typhoid fever, 175; measles, 117; whooping-cough, 72; scarlatina, 32; erysipelas, 16; cerebro-spinal fever, 13. Total, 540. From pulmonary consumption, 377; pneumonia, 536; bronchitis, 165.

Births reported during the year, 7,462—709 more than for the preceding year, and 2,555 more than deaths. Birth rate per 1,000 of population, 26.4.

SOUTH CAROLINA.—Charleston, 65,165—white, 28,870; colored, 36,295. H. B. Horlbeck, M. D., Health Officer, reports for four weeks ending November 27: Deaths, 117; 87 colored. Under five years of age, 31. Annual death rate—white, 13.5; colored, 30.6—22.0.

TENNESSEE.—J. A. Albright, M. D., President, Somerville; J. Berrien Lindsley, M. D., Secretary, died December 7.

Memphis, 64,134—27,561 colored. Cases of yellow fever re-

ported, October 22 to November 10, 52; deaths, 14. The city authorities have memorialized the Governor to call an extra session of the Legislature to authorize the extension of the sewerage system.

TEXAS.—Many of the physicians still persist in denying that there has been any yellow fever in the State during the past summer and autumn. The Galveston News of December 1 published a long letter by Dr. C. H. Wilkinson, of that city, which purports to describe the most extensive epidemic of dengue that has ever prevailed in the State—but only dengue, of which there were at least 30,000 cases in Galveston, and that 500 cases were treated by himself

That the disease which prevailed in Galveston "was not yellow fever at any time, but was dengue under forms varying from the simple and usual to the anomalous and suspicious, a transformation which has occurred here and elsewhere on former occasions."

UTAH.—Salt Lake City, 48,076. W. T. Dalley, M. D., Commissioner, reports for October 57 deaths, of which 15 were under five years of age. Annual death rate per 1,000, 9.77. From zymotic diseases, 15; consumption, 5; typhoid fever, 8.

WASHINGTON.—Seattle, 60,000.—R. M. Eames, M. D., Health Officer, reports for October 37 deaths. Annual death rate per 1,000, 7.4. Deaths from consumption, 2; pneumonia, 2; diphtheria, 2.

WISCONSIN.—Solon Marks, M. D., President, Milwaukee; U. O. B. Wingate, M. D., Secretary, Milwaukee.

Milwaukee, 275,000. Walter Kempster, M. D., Commissioner of Health, reports for October: Deaths, 247; 141 under five years of age. Annual death rate per 1,000. 10.7. Diphtheria caused 17 deaths; typhoid fever, 2; consumption, 34; pneumonia, 16; other respiratory diseases, 10.

Annual report for the year ending April 17, 1897: Births, 7,855; deaths, 3,904—1,791 under five years. Annual death rate, based upon a population of 260,000, 15.00. Prevailing causes of death: Consumption, 335; other tubercular diseases, 110; diarrhoeal diseases, 298; diphtheria (and croup), 254; pneumonia, 217; bronchitis, 189; heart disease, 214; typhoid fever, 46; measles, 29; nervous system, 511.

MEXICO.—Consejo Superior de Salubridad. Dr. Eduardo Licéaga, President, Mexico; Dr. José Ramirez, Secretary-General.

City of Mexico, 344,377. Bulletin reports for the month of October, 1,326; from diarrhoeal diseases, 302; tubercular diseases, 122; pneumonia, 95; bronchitis, 96; typhus, 48; smallpox, 6. Annual ratio per 1,000, 46.20.

MORTALITY STATISTICS ABROAD FOR THE THIRD QUARTER, 1897.

Population, total mortality, annual death-rate per 1,000, and deaths from typhoid fever, diphtheria, acute lung diseases and consumption.

London, 4,463,169; 21,562; 19.3; 144; 496; 1,458; 1,842. Glasgow, 714, 919; 3,457; 19.3; 44; 25; 490; —. Liverpool, 633,078; 4,547; 28.7; 46; 26; —; —. Manchester, 534,299; 3,459; 25.9; 17; 10; —; —. Birmingham, 505,772; 3,319; 26.2; 22; 26; —; —. Leeds, 409,472; 2,239; 21.9; 16; 8; —; —. Sheffield, 351,848; 2,288; 26.0; 42; 5; —; —. Dublin, 349,594; 2,087; 23.9; 43; 34; 206; 276. Edinburgh, 292,364; 1,343; 18.4; 7; 21; 155; 136. Belfast, 281,431; 1,754; 24.9; 97; 7; 234; 222. Nottingham, 232,934; 1,262; 21.7; 12; 5; —; —. Bristol, 232,242; 887; 15.3; 5; 10; —; —. Bradford, 231,260; 1,151; 19.9; 5; —; —; —. Hull, 225,045; 1,406; 25.0; 21; 9; —; —. Newcastle, 217,555; 1,169; 21.5; 5; 5; —; —. Salford, 213,190; 1,493; 28.0; 13; 4; —; —. Leicester, 203,599; 1,128; 22.2; 4; 22; —; —. Portsmouth, 182,585; 861; 18.9; 17; 11; —; —. Cardiff, 170,063; 711; 16.7; 5; 17; —; —. Brighton, 121,401; 536; 17.7; 5; —; —; —. Norwich, 110,154; 556; 20.2; 16; 3; —; —. Plymouth, 97,658; 473; 19.4; 3; —; —; —. Luxembourg, 19,945; 95; 19.1; 2; 2; 2; 2. Amsterdam, 495,683; 4,824; 14.7; 5; 22; —; —. Rotterdam, 288,863; 1,283; 17.8; 11; 5; —; —. La Hague, 191,529; 877; 18.3; —; 3; —; —. Paris, 2,511,629; 10,457; 16.7; 78; 32; 738; 2,033. Lyons, 466,767; 2,070; 17.7; 38; 6; 483; 302. Lille, 216,276; 1,262; 23.3; 2; 5; 84; 178. Saint-Etienne, 135,784; 658; 19.4; 14; 8; 48; 75. Nantes, 125,757; 577; 18.4; 9; 3; 35; 103. Le Havr, 119,470; 848; 28.4; 11; 6; 36; 103. Reims, 108,943; 760; 27.9; 9; —; 42; 75. Nancy, 96,306; 488; 20.3; 5; 1; 27; 72. Limoges 77,703; 422; 21.7; 4; 4; 36; 78. Bensançon, 57,566; 255; 17.7; 7; 1; 25; 16. Pau, 33,012; 143; 17.3; —; —; 13; 23. Brussels, 531,011; 2,317; —; 33; 3; 189; 259. Berlin, 1,708,499; 8,609; 20.2; 34; 105; 469; 837. Hambourg, 641,780; 3,281; 20.4; 16; 22; 194; 273. Munich, 418,000; 2,826; 27.0; 12; 40; 105; 298. Leipzig, 413,529; 2,650; 25.6; 15; 13; 145; 193. Breslau, 367,769; 2,653; 28.9; 23; 23; 153; 330. Dresden, 347,485; 2,033; 23.4; 5; 37; 124;

173. Cologne, 331,000; 2,387; 28.8; 11; 18; 127; 159. Frankfort, 244,889; 997; 16.3; 7; 5; 67; 128. Hanovre, 220,644; 1,315; 23.8; 1; 12; 89; 84. Madgebourg, 218,284; 1,429; 26.2; 6; 9; 75; 90. Dusseldorf, 185,911; 1,303; 28.0; 2; 11; 75; 58. Koenigsberg. 176,320; 1,348; 30.6; 17; 21; 125; 75. Nuremberg, 168,654; 966; 22.9; 2; 6; 44; 154. Chemnitz, 168,004; 1,365; 32.5; 1; 22; 33; 86. Altona, 150,747; 772; 20.5; 3; 5; 48; 65. Charlottenbourg, 149,958; 721; 19.2; 2; 5; 57; 51. Stettin, 148,481; 1,235; 33.3; 14; 16; 49; 67. Stuttgart, 146,661; 613; 16.7; —; 3; 25; 58. Brême, 145,385; 588; 16.2; 1; 4; 34; 61. Strasbourg, 139,443; 828; 23.8; 5; 7; 52; 61. Barmen, 130,428; 507; 15.5; 3; 5; 51; 58. Dantzig, 127,272; 960; 30.2; 7; 5; 67; 53. Halle, 121,024; 862; 28.5; 9; 10; 83; 55. Brunswick, 119,600; 650; 21.7; 3; 2; 34; 47. Aix-la-Chapelle, 112,793; 900; 31.9; 1; 6; 60; 49. Crefeld, 107,837; 704; 26.1; 3; 8; 37; 66. Mannheim, 101,857; 587; 23.1; 1; 4; 38; 62. Essen, 101,644; 524; 20.6; 5; 5; 65; 42. Mayence, 77,643; 377; 19.4; 1; 4; 26; 31. Metz. 59,671; 287; 19.2; 7; —; 15; 24. Vienna, 1,542,294; 7,492; 19.4; 24; 67; 785; 1,243. Prague et Suburbs, 369,494; 1,623; 17.6; 49; 27; 101; 300. Triest, 162,606; 1,015; 25.0; 8; 21; 64; 158. Lemberg, 138,298; 908; 26.3; 24; 16; 72; 157. Gratz, 121,616; 646; 21.2; 6; 5; 35; 120. Brunn, 101,935; 667; 26.2; 3; 14; 41; 123. Cracovie, 81,400; 629; 30.9; 13; 13; 47; 97. Pilsen, 57,324; 279; 36.2; 19.5; 3; 4; 15; 32. Linz, 51,599; 358; 27.8; 11; 2; 4; 71. Copenhagen, 333,714; 1,497; 17.9; 6; 15; 88; 185. Stockholm, 267,100; 1,128; 16.9; 3; 6; 87; 157. Gothembourg, 116,000; 406; 14.0; 1; 9; 18; 62. Christiania, 192,141; 883; 18.4; 10; 4; 40; 112. St. Petersburg, 1, 267,023; 6,154; 19.4; 215; 453; 136; 678. Moscow, 988,-610; 7,510; 30.4; 130; 171; 113; 651. Warsaw, 614,752; 3,717; 24.2; 24; 63; 431; 261. Odessa, 404,651; 2,233; 22.1; 47; 28; —; 168. Bologne, 149,898; 708; 18.9; 29; 4; 69; 70. Madrid, 487,169; 3,068; 25.2; 74; 29; 454; 445. Bilbao, 66,956; 560; 33.5; 11; 3; 76; 44. Bucharest, 206,000; 1,696; 32.4; 38; 44; 140; 176.

For the first quarter, 1897.

Porto, 139,856; 1,530; 1,199; 34.3; 13; 16; 246; 136. Jassy, 80,-959; 683; 33.7; 21; 38; 33; 70.

For the second quarter, 1897.

Marseille, 447,344; 3,100; 27.7; 268; 12; 508; 210. Bordeaux, 252,-102; 1,124; 17.8; 12; 8; 104; 119. Nantes, 125,757; 655; 20.8; 4; 2; 82; 124. Roubaix, 124,447; 542; 17.4; 1; 5; 86 80. Nice, 108,-227; 469; 17.3; 4; 4; 63; 61. Limoges, 77,703; 418; 21.5; 5; 4; 51; 95. Grenoble, 63,805; 341; 21.4; 1; 1; 35; 57. Saint-Quentin.

48,689; 233; 19.1; 4; —; 28; 27. Breslau, 367,769; 2,445; 26.6; 6; 13; 259; 372. Helsingfors, 76,276; 306; 16.0; 3; —; 47; 62. Rome, 476,917; 2,005; 16.8; 8; 5; 292; 234. Milan, 458,405; 2,169; 18.9; 28; 41; 499; 228. Genoa, 211,151; 1,217; 23.1; 9; 9; 251; 134. Florence, 194,613; 978; 20.1; 9; 6; 210; 97. Bologne, 149,898; 747; 19.9; 1; 1; 152; 67. Madrid, 487,169; 3,596; 29.5; 59; 34; 741; 444. Jassy, 80,959; 537; 26.5; 6; 21; 24; 67. Alger, 96,642; 438; 18.1; 7; 2; 68; 50. Mexico, 344,377; 4,562; 53.0; 292; 3; 895; 419. Montevideo, 244,839; 892; 14.6; 31; 7; 87; 105. St. Louis de Potosi, 68,097; 771; 45.3; 24; 1; 83; 39.

BUENOS AYRES, 725,554. A. B. Martinez, Director of the Municipal Statistics Bureau, reports for the month of September 1,008 deaths, of which 408 were under five years of age. Annual death rate, 16.6 per 1,000. From diphtheria there were 23 deaths; typhoid fever, 50; acute lung diseases, 168; consumption, 114.

THE PLAGUE IN INDIA is spreading rapidly, and now threatens all the northern and central part of the peninsula. Much apprehension has been caused by its appearance at Hurdwar on the Ganges, which is a center for pilgrimages and is frequented by great crowds drawn from all parts of India.

BUENOS-AYRES-ANNUAIRE STATISTIQUE

The sixth volume of the Statistical Annual, published by the Health Department of the city of Buenos-Ayres, forms a large quarto volume of 624 pages. It treats of the municipal affairs under fifteen different heads, the most important of which is included in Demography. This subject is comparatively new, and has, within a very short time, attained an unusual development. As it treats, specially, of everything that pertains to the people, to the increase or decrease of population, it has for subdivisions every thing that favors or hinders the growth of population, as climate, atmospheric changes, water supply, food, its quality and quantity, hospitals, asylums, and whatever influences the health of large masses of people. Foreign commerce is not without danger to the health of cities and seaport towns, and comes naturally under the inspection of Public Health Departments, especially during the prevalence of epidemic diseases in any part of the world.

The subject was not systematically studied before 1830, when Quetelet published his work, "Physique Sociale," which seems to be the earliest attempt to systematize the statistics of the health of large centers of population.

In 1855 Schille Guillard applied to the subject the distinctive term, "Demography." Bertillon, Bodio, Engel, Farr and others have since developed the subject with wonderful success.

Wagner, in Germany, and Bodio, the head of the Statistical Department in Italy, have studied the development of population as influenced by marriages, births, and other causes, with great perseverance, and with remarkable success.

It is a constant, a universal observation, that more male children are born annually than females; this occurs in Italy in the proportion of 106 males to 100 females; in France, Switzerland, Germany, and most of the other countries there are 105 males to 100 females, while in England and Wales the proportion is reduced to 104 males to 100 females.

It is a curious fact, however, that in the case of illegitimate children, those born out of marriage, the reverse is true—there are more females than males.

Again, social conditions have a perceptible influence on the increase of the population. Maxime du Camp has shown that during a period of peace and quiet, as in January, 1871, the births were 5,378. A period of excitement and distress followed, and in March the births fell to 3,606, and in October to 1,675. But in January, 1872, they increased again to 4,238.

Rawson, of Buenos-Ayres, who has made demography a special study, presents the subject under another aspect. In England, during a period of calm, for every 1,000 births there were 150 deaths in the year, among children under two years of age, while, during the war in the East, the deaths increased to 158.5 yearly. When peace was restored by the treaty of Paris, the number of deaths decreased to 143.5 in the year. In Buenos-Ayres, in children born during the excitement of the revolution in 1874, the deaths were 278.9 males and 202.5 females, but in 1878, a period somewhat more calm, the number of deaths fell to 220 males and 175 females.

There is room here, evidently, for extensive development of whatever relates to changes in the population and in the application of demography.

Social conditions, labor troubles, agencies influencing morals, destroying mutual confidences in society, in the family, the amount of criminality and all that tends to disturb the peace of society, must have a powerful influence on the growth of the population. The upheavals in society, both moral and physical, now encour-

aged by sensational reports of crimes, besides poisoning the minds of the young, exert an evil influence on the healthy development, physical and moral, of society, and increase, in direct proportion, the mortality among infants, and in other ways retard the growth of population.

Buenos-Ayres, on the 31st of December, 1895, had a population of 677,786, which was an increase of 74,774 over 1894, and at the end of the year 1896 the population was 712,095, an increase of 34,309, or 5 per cent. over 1895. The average increase annually from 1887 to 1895 was 6.64 per cent. With 5 per cent. increase annually, the population would be doubled every 20 years, but 19,128, or 55.8 per cent., more than half the increase, was from immigration.

The increase in some of the European cities was very variable; that of Birmingham, England, was only 0.9, or less than 1 per cent., while Warsaw was 7.3 per cent., Prague 6.0 per cent., Philadelphia, 2.1 per cent., and Brooklyn, 4.1 per cent. New York was not given. Brooklyn, then, would double its population in a little less than 25 years.

In 1896, with a population of 712,095, the births were 28,826, or 14,398 males and 14,428 females, which gives 40.4 for every 1,000 inhabitants.

In 31 of the principal cities, Warsaw showed the highest birth rate, being 41.7 births for every 1,000 inhabitants; Buenos-Ayres next with 40.4 births, Buda-Pesth, 37.9; the smallest was Lyons, 19.4; next Geneva, 21.1; Turin, 21.4; Paris, 24.6; Berlin, 27.4; all the others ranged from Dublin, 30.5, to Buda-Pesth, 37.9, as given above.

The increase of population in the city of Buenos-Ayres, apart from births, is not all from foreign immigration. In 1887, in a population of 433,375 there were 129,712 born in the Argentine Republic outside of the city.

In analysing the increase of population in Buenos-Ayres, from 1887 to 1895, three factors are found—the so-called vegetative element was 38.8 per cent., the external 48 per cent, and the internal 17.5 per cent.

There were 5,797 marriages in 1896, which is 7.8 for every 1,000 inhabitants. The report for 1895 showed that in every 100 marriages 20 were natives, 25 Italians, 12 Spaniards, and 3 French; the others were among different nationalities.

Mortality, still births excluded, was, in Buenos-Ayres, 19.1 per

1,000 inhabitants; London had only 18.8; Lisbon, the highest given, 33. St. Petersburg, 31.4; Naples, 29.6.

The record of food consumed in the city is remarkable; the increase for the year in beeves and calves was 46,300, and of pigs, 2,921.

The people consumed in excess of 1895, 398,355 hens, 352,419 chickens, 37,844 turkeys, 38,891 ducks, 66,218 pair of pigeons, 21,710 rabbits, and 1,643,929 dozen of eggs.

The 314 bakeries furnished 46,956,874 kilos of flour, which gave an average of 65 kilos for every inhabitant—the kilo is about 2 pounds 3¼ ounces.

The daily supply of water was 34,444,751 kilolitres—each kilolitre about 265 gallons. Each inhabitant receives about 132 litres.

Deaths from the principal diseases, in children under two years of age, in 1896, were: From bronchitis 311, broncho pneumonia 588, cerebral congestion 76, pulmonary congestion 52, consumption 18, croup and diphtheria 61, whooping cough 82, debility 296, enteritis 252, entero-colitis 78, eclampsia 113, gastro-enteritis 638, cholera-infort 10, hydro-cephalis 15, icterus 15, meningitis 561, pneumonia 261, nephritis 14, bachitis 17, syphilis 49, measles 34, tuberculosis 69, variola 62, Tetanus infantile 212. The table gives the deaths for each year from 1887 to 1896.

The analysis of food is very complete, including the different kinds of meat, the number and quality of each article as good, passable, bad or dangerous; vegetables and fruits, what admitted and what condemned.

Primary instruction seems to be in a satisfactory condition; children registered in the 1st class, primary, 24,603, in 2d 9,075, in 3d 4,218, in 4th 2,335, in 5th 859, in 6th 481; total, 41,571. In the secondary course the whole number is 1,687. There are 1,067 teachers, 200 male and 867 female. Teachers for special branches, 124; 52 males and 72 females.

Hospitals, asylums, prisons, and other institutions are treated in great detail and with the clearness that characterizes the whole report. T. P. C.

NEW ARGENTINE LAW IN REGARD TO THE SALE OF MEDICINES.

The Congress of the Argentine Republic is expected to pass a law creating a national Board of Health (or Department of Public Health, as it is called officially). The law will become effective in a short time. This Board of Health will have complete control as to

what medicines or compounds shall be allowed upon the Argentine market, as will appear from the following two articles of the law:

Article 36.—It shall be lawful to sell or to expose for sale in any pharmacy or apothecary's shop or store such specialties or compounds only whose component parts are clearly specified upon a visible part of the package thereof, setting forth also the doses of the active substances contained therein.

Article 37.—The Department of Public Health will authorize the sale of the medicines referred to in Article 36, when the required conditions have been fulfilled, without which authorization such goods cannot be offered for sale.

Failure to comply with the requirements of these two articles will be punished by a fine of from $100 to $200.

It will therefore become necessary for American manufacturers exporting medicinal compounds and specifics to the Argentine Republic to obtain the required permit from the Department of Public Health and to state the composition of the medicine on each package. Full information concerning the further requirements for securing the above permit will be supplied upon application to the editors of this paper.—From the *Scientific American.*

ITALIAN LONGEVITY.—Supported by the newspaper Don Chisciotti, a subscription has been opened, the result of which is to be divided between those who on Jan. 1, 1900, will have seen three centuries—that is to say, those who, having at that time at least 100 years and two days, can boast of having lived in the eighteenth, nineteenth, and twentieth centuries. Superficial observers may think that for this purpose comparatively little will be required, or that if a large sum be collected it will be divided among very few people. However, this is a mistake, as, according to statistics, there are now in Italy from 200 to 300 people whose age exceeds 100 years. The historian Flegone, in his books "De Mirabilibus" and "De Longaevis" records that from a census taken at the time of the Emperor Vespasian, it resulted that there were in Italy 65 centenarians, but it is enough to open the medical encyclopaedia of Dechambre to establish that the number of centenarians has proportionately increased considerably since ancient times, even taking into consideration the augmentation in the population, the diminution of epidemics, the lesser frequency of war, the amelioration of hygienic conditions—in a word, the progress of civilization, which has greatly lessened mortality. In France, for instance, in 1837, when the population was much smaller than at present in

Italy, the centenarians were 175. To reach 100 years, however, should not be strange, according to an Italian saying which runs: "A dog lasts 9 years; a horse lasts three dogs, 27 years; a man lasts three horses, 81 years; a crow lasts three men, 243 years; a deer lasts three crows, 729 years; an oak lasts three deer, 2,187 years."—London Pall Mall Gazette.

IF YOU FEAR INSANITY—GET MARRIED.—The last report issued by the Commissioners in Lunacy calls attention to the alarming increase of madness in this country. One part of the facts, however, has a bright side; it can be used quite fairly as an argument in favor of marriage, an old-fashioned and honorable institution that has of late years been foolishly attacked from many quarters.

Married life has its trials—as the spider said when his wife gobbled him for her breakfast—but a man who may be now asking himself, "Shall I marry?" ought to take into the account his chance of going mad if he do not marry.

At every age, from twenty to sixty-five and upward, the chance of a single man going mad is much greater than the chance of a married man going mad. At ages twenty to twenty-four the "odds" against the single man, as compared with the married man, are 55 to 10—that is, 5½ to 1—and these odds against the single man, although they become smaller as his age increases, are so much in favor of the married man that, in sober earnest, the facts now dug out and shown ought to be carefully thought over by all unmarried men.

As regards women, the married women show a marked superiority over unmarried women as regards not going mad, but their superiority over single women is not so great as that of married men over single men.—The London Mail.

A DEPARTMENT OF PUBLIC HEALTH IN GREAT BRITAIN.—The announcement has been made that when Parliament re-assembles it will be moved in the House of Commons "That in the opinion of the House it is desirable that a Department of Public Health be constituted, and that the same be under the charge of a responsible Minister having a seat in Parliament."

OBITUARY.

DR. JOHN BERRIEN LINDSLEY, Secretary of the State Board of Health of Tennessee, died at his home in Nashville, December 7, 1897. He was born in Princeton, N. J., October 24, 1822, and was a little more than 75 years of age at the time of his death. His father was the Rev. Phillip Lindsley, at one time President of Princeton College, and for twenty-five years president of the University of Nashville. His father came to Nashville with the idea of establishing a great Southwestern University. His mother was before her mariage Miss Margaret Lawrence, of New York, whose father was Nathaniel Lawrence, an officer in the Revolutionary army. On both his father's and mother's side, his ancestors were driven from England by the fall of the Cromwell party, to which they had joined their fortunes. His mother's father succeeded Aaron Burr as Attorney-General of the State of New York.

Dr. Lindsley's early education was received at home, after which he took a four years' course of study in three years, winning for himself the degree of Bachelor of Arts from the University of Nashville. His medical education was received as a student in the office of Dr. William G. Dickinson, after which he attended the medical departments of the University of Louisville and Pennsylvania.

On the completion of his medical training, Dr. Lindsley turned his attention to the ministry. Under the care and instruction of the Presbytery of Nashville, he was ordained in October, 1846. For some time he was stated supply to the Smyrna and Hermitage Churches, and was for one year at work for the Presbyterian Board of Domestic Missions and preached to the slaves in the Nashville district.

From 1838 to 1850 he was a private pupil of Gerard Troost, one of the distinguished pioneers of American science. On the death of Dr. Troost, his valuable collection was committed to his pupil's care, and in 1874 the collection was disposed of to the Library Association of Louisville. In 1847 Dr. Lindsley made an extensive geological survey through the Eastern and Northern States. The years 1852-1859 were spent in the medical schools of France and Germany, to which training is due much of the marked elegance and literary finish of his productions, betraying a wide learning.

Dr. Lindsley was largely instrumental in having erected the stone buildings which are a part of the University of Nashville, he himself giving $10,000 to the work. In 1850 he was instrumental in establishing the Medical Department of the University of Nashville, of which faculty he was the first dean, and was for twenty-three years professor of chemistry. His salary was donated to assistants, or went to the support of his journal, the "Nashville Journal of Medicine and Surgery."

In 1855 he was unanimously chosen Chancellor of the University of Nashville. Under his management the institution became one of the most flourishing in the country, its march of success being only broken by the advent of the civil war.

In 1867 Dr. Lindsley organized the Montgomery Bell Academy, in accordance with the ideas of its founder, bringing the school to a high state of efficiency at once by the power of his presence and influence. In 1870 he resigned, recommending Gen. E. Kirby-Smith as his successor. In 1870 he took part in forming the "Tennessee College of Pharmacy," of which he had been the professor of materia medica since 1876.

In 1876 he was elected as City Health Officer, and served as such for four years. During his term of office the great yellow fever plague of 1878 swept over the South, and that it did not reach Nashville was due to the heroic efforts of Dr. Lindsley as City Health Officer. The city was made as clean as a swept floor, and all sources of malaria were filled up. By his careful management the death rate of the city was materially reduced and plans of sanitation introduced which have been of incalculable benefit to the city since.

In 1880 he was elected to the chair of "State Preventive Medicine" in the medical department of the University of Tennessee. In 1877 he became a member of the unendowed State Board of Health, with which organization he has been identified ever since its organization.

At the time of his death Dr. Lindsley was a member of the Numismatic and Antiquarian Society of Philadelphia; a charter member of the American Chemical Society; since 1851 a member of the American Medical Association; a fellow of the American Academy of Medicine; a director in the National Prison Association; a corresponding member of the National Prison Association of France, and for several years Treasurer of the American Public Health Association, a meeting of which organization in Philadelphia Dr. Lindsley had just returned from, and at which

he had been re-elected as the Southern member of the Executive Committee.

But his learning was recognized outside the limits of his profession. He was a fellow of the Historical Society of London and of America. Of the American Tract Society and of the American Bible Society he was a life member. For thirty years he had been an active member of the State Historical Society, of which he was one of the most valuable members. In 1856 the College of New Jersey, at Princeton, conferred upon him the degree of Doctor of Divinity.

In literature Dr. Lindsley was known by the vigor and polish of his writings. Many articles from his pen have appeared in "The Theological Quarterly" of his church. His articles on "African Colonization" were reprinted and enjoyed a wide circulation, attracting much attention from those who had been studying the negro problem.

A number of pamphlets in behalf of the University of Nashville were published by Dr. Lindsley.

In 1886 he edited and published a large volume entitled "The Medical Annals of Tennessee." He was also the author of a work entitled "Encyclopedia of Tennessee History."

On February 9, 1857, Dr. Lindsley married Miss Sarah McGavock, daughter of Jacob McGavock, and granddaughter of Felix Grundy. His wife and five children survive him. His children are: Miss Louise Lindsley, Mrs. Robert Kent, of Virginia; Mrs. Percy Warner, Miss Annie D. Lindsley.

Dr. Lindsley had recently received a testimonial of the esteem in which he was held by his State when the last Legislature re-elected him as Secretary of the State Board of Health, notwithstanding his advanced age.

BOOK REVIEWS.

How to Build a Home. By Francis C. Moore. 165 pages. Doubleday & McClure Co., New York.

A woman doctor once said to an architect that if she were to build a house she would not consult an architect, but would tell the builder just what she wished for in the way of a house and would expect to get it. The architect replied, madam, according to your reasoning you would undoubtedly approve of a man going to a druggist and telling him he wished to build up his system, and expect him to do it, without any knowledge of the architecture of the human body.

This dainty little book admirably tells how to do otherwise. In it will be found advice about everything necessary to the construction of a house from under-pinning to chimney-pots, and all the details requisite for comfort, convenience, structural strength and safety from fire. The suggestions are available whether the building be brick, stone or frame, or whether the style be, as the author states, Colonial or Romanesque, or Byzantine or "Queen Ann in front and Mary Ann behind," and in opposition to the wisdom of the woman-doctor who knew it all, he says on the first page, "select a competent architect." Having selected the architect and possessing this work as a help to telling you what you want, you will not be like the man who is his own lawyer, with a fool for a client.

Outlines of Rural Hygiene. By Harvey B. Bashore, M. D., Inspector for the State Board of Health of Pennsylvania. With an appendix on the Normal Distribution of Chlorine, by Prof. Herbert E. Smith of Yale University. 84 pages. Illustrated. The F. A. Davis Co., Philadelphia, New York and Chicago.

This is an excellent companion book to the preceding one, for while building a house it behooves us to look to the outside surroundings. Our water-supply, shall we get it from a well, a cistern, a river, lake or spring? How shall we dispose of waste material? What is the nature of the soil about us? What is the sanitary conditions of the habitations and premises of our neigh-

bors? These and many other questions are ably and successfully treated in this little sanitary guide-book.

There is absolute ignorance or neglect of sanitary measures in many districts outside the large cities, and to overcome them it is to the interest of all residents of such districts to familiarize themselves with the remedies herein set forth.

COLOR-VISION AND COLOR-BLINDNESS. A practical Manual for Railroad Surgeons. By J. Ellis Jennings, M. D., formerly Clinical Assistant Royal London Ophthalmic Hospital; Ophthalmic and Aural Surgeon to the St. Louis Mullanphy and Methodist Deaconess Hospitals; Consulting Oculist to the Missouri, Kansas and Texas Railway System, etc. 115 pages. Illustrated. Price $1.00. The F. A. Davis Co., Philadelphia.

A book of much practical utility for the detection of defective vision and eminently commendable for the concise manner in which all the essentials to a practical knowledge of the subjects are stated and illustrated.

PROCEEDINGS OF THE ASSOCIATION OF MILITARY SURGEONS. Edited by James E. Pilcher, M. D., Captain in the Medical Department of the United States Army; Secretary of the Association. 734 pages. Columbus, O.: Berling Printing Co.

The seventh annual meeting of the association was held at Columbus, Ohio, May 25, 26 and 27, 1897. Among the many papers presented are the following: On the Status of the Military and Naval Medical Office, by Medical Director A. L. Gihon, U. S. N., President; A Plea for the More Efficient Organization of the Medical Department on our Ships of War, by Medical Inspector J. C. Wise, U. S. N.; The Work of the Medical Department on Naval Vessels, by C. A. Siegfried, M. D., U. S. N.; The Practical Disinfection of Ships of War, by T. C. Craig, M. D., U. S. N.; Some Practical Hints on Antisepsis in the Navy, embracing Hygiene and Disinfection of Ships, Barracks and Yards, with a View to Preventing the Importation of Germs of Disease, and the Spread of Contagious Affections, by Medical Director G. W. Woods, U. S. N. There are also articles on Military Personal Indentification; Clothing and Accoutrements; Military Physical Training; Sanitary Work in the National Guard; Instruction in Military Medicine and Surgery, and Foreign Military Sanitary Matters. Altogether the volume is one of much value, replete with matter of practical utility

STIRPICULTURE. By M. L. Holbrook, M. D., Editor of the "Journal of Hygiene," author of "Hygiene of the Brain," "How to Strengthen the Memory," "Advantages of Chastity," etc.; 192 pages. Price $1.00. M. L. Holbrook & Co., New York.

This is the work of an evolutionist who believes that man should work out his own evolution by observing certain laws which he sets forth bearing on selection in marriage and the conditions of life influencing offspring, to the end that there may be continuous and progressive improvement toward an ultimate ideal of health and longevity.

REPORT OF THE COMMISSIONER OF EDUCATION for the year ending June 30, 1896. Vol. II. 1,200 pages. Government Print.

This volume contains statements and reports of quite as much interest to the educator and others interested in education as does the first volume, reviewed in November. Among the leading subjects are: Education in Sweden and Iceland; Higher and Secondary Education in the United States, by Dr. Gabriel Compayré; Mental Fatigue in School; How Agriculture is Taught in Prussia and France; Industrial Education in Germany, Austria and Switzerland; The Bertillon System as a Means of Suppressing the Business of Living by Crime; Art Decorations in Schoolrooms; Report on Education in Alaska; City School Systems; Statistics of Normal Schools; Statistical Review of Higher Education; Statistical Review of Professional Schools; Education of the Colored Race; Schools for the Defective Classes; Reform Schools.

UNIVERSITY OF THE STATE OF NEW YORK. 109th Annual Report, for the year ending September 30th, 1895. Melvil Dewey, Secretary.

Two volumes of reports and statistics bearing on the subjects of university organization, administration and legislation; incorporation of teaching institutions and public libraries; inspection of institutions; university institutions; State library and State museum, and other reports; all of importance and interest to the student of educational affairs.

CONTEMPORARY LITERATURE.

THE MEDICAL SIGNERS OF THE DECLARATION OF INDEPENDENCE.

In a paper read before the American Academy of Medicine, Philadelphia, May 31, 1897, by Albert L. Gihon, A. M., M. D., Medical Director U. S. N. (retired), entitled, "The Great Physician of the Revolution," we were surprised beyond measure to find an error of more than ordinary gravity, which we desire to see corrected, and which we are certain none will be more ready to do than Dr. Gihon himself. After speaking of the niggardly manner in which the medical profession, to its shame be it said, has contributed towards the fund for a monument to Benjamin Rush, we find the following: "This illustrious signer of the Declaration of Independence, and the only practitioner of medicine whose name is affixed to that instrument——."

We desire to call attention to this statement, not because we wish in any way to detract from the noble share which Benjamin Rush took in signing that immortal document, but because through ignorance or carelessness of an unpardonable kind, the medical profession is not receiving its just deserts. Is there not a member of the American Academy of Medicine who knows that, besides Rush, four other physicians signed that same document. Lyman Hall, of Georgia; Oliver Walcott, of Connecticut; Josiah Bartlett and Mathew Thornton, of New Hampshire.

It is strange indeed that the best educated medical men of the North should have allowed Dr. Gihon's statement to pass unchallenged. The American Academy of Medicine is a body claiming an educational superiority—it requires for membership (or rather, the high-sounding "fellowship") a literary degree of A. B., or its equivalent. Its function is to "elevate the profession," and it does seem to us ridiculous that these superiorly educated beings, assembled together in the City of Brotherly Love should exhibit so monumental an ignorance concerning the fathers of the Republic in which they live. Even the editor of the Bulletin, issued by the Academy, let the assertion stand without comment.

In the same number of the Bulletin which contained Dr. Gihon's paper, we find in the editorials the following modest description: "The Academy is, in reality, a special medical society, investigating, in a philosophic manner, the many problems pertaining to

the physician and his surroundings. It is endeavoring to elevate the profession of medicine, not in a hackneyed and offensive sense, but by the application of the Baconian method of investigation to the many problems of vital interest to the practice of medicine, to formulate accurate statements of the real condition, and suggest logical methods for securing the best available condition."

Oh, learned and modest fellows! would it not be wise to show your less educated brethren that you know something of the past before you would lead us in the future? Had you not better apply your "logical methods" and "accurate statements" to the most salient features of our history and prove to us the value of the titles so ostentatiously worn?—Georgia Journal of Medicine and Surgery.

PURE AIR AND SUNSHINE.

Intelligent people everywhere recognize the importance of pure air and sunshine as the essential means of acquiring a healthy constitution and maintaining it, and as indispensable for restoring it when from any cause it has become impaired. But it is only just now, as it were, that people have begun to learn the twofold effect of a bountiful supply of pure air and sunshine; that, while these agents are essential to the procurement and maintenance of human health, they are inimical to microbic life, and to none more so than to the tubercle bacillus; and conversely, that climatic or any other conditions restricting the needful supply of pure air and sunshine are promotive of microbic life, and of none more so than of the tubercle bacillus. Nevertheless, the rigor of the winter climate in the greater part of the northern United States, where pulmonary consumption extensively prevails, is such as frequently to render the maintenance of the primary conditions essential to health impracticable for those who most need them—those who are afflicted with or predisposed to consumption.

Although the benefit to be expected from a change of climate under the circumstances indicated is by no means limited to persons so afflicted or so predisposed, the best test of the benefit to be expected from a health resort is the observed relation that it holds to consumption and its favoring conditions, as compared with the locality to be abandoned. This test is justified by the fact that consumption is less amenable to mere medical treatment than any other disease, and by the excess of the mortality caused by it over that of any other disease in districts where it prevails. Moreover, places relatively exempt from consumption are ordinarily correspond-

ingly exempt from other diseases propagated by bacteria, and vice versa.—From "Winter Health Resorts," Medical Record, Nov. 27, 1897.

Dr. GEORGE M. STERNBERG, Surgeon-General of the United States Army, will have an article in Appleton's Popular Science Monthly for January on the Causes and Distribution of Infectious Diseases. The subject will be treated in a historical way, and will include a brief outline of the more serious epidemics of the past one hundred years.

THE SOUTH AND YELLOW FEVER.—The numerous conflicting and, in many instances, ridiculous quarantine regulations, formulated by State, county, and municipal authorities, and enforced oftentimes by excited and inexperienced men, aided in some cases by the shotgun, during the epidemic of yellow fever which has just prevailed in the Gulf States; the utter disregard of commercial and railway interests, and in the end the complete failure to arrest the passage of the contagion from town to town and from State to State, form a telling object lesson, which must convince the staunchest supporter of State autonomy that the Federal government should take entire and complete control of quarantine in these several diseases.

Illustrations of confusion and conflict of sanitary and quarantine regulations during the recent epidemic were to be found everywhere in the territory involved. Unreasonable quarantine restrictions were imposed. One State quarantined against another State, and one town against another town. One or two small villages in Alabama and Mississippi quarantined even against the world. Travel was interfered with or wholly suspended; commerce was paralyzed throughout Alabama, Mississippi, Louisiana, and Texas, and greatly hampered in all contiguous States; while the movement of railway trains in these States was either entirely forbidden or limited.

State and municipal authorities found themselves unable to cope with the disease or to stamp it out, because they lacked experience, and the machinery for effective quarantine and for the enforcement of sanitary rules and regulations.—From "The National Government and the Public Health," by Dr. C. M. Drake, Chief Surgeon of the Southern Railway, in North American Review for December.

THE FEAR OF DEATH.—Man is not normally preoccupied with the thought of death. While he is in full vigor of health and strength he is not afraid of it and takes little heed of it. The idea that he will have to die some day rarely enters his mind, and when it does present itself it is so vague and relates to an event so uncertain as to the time when it will occur that no distress is produced by it. This inertia of the thought of death in the strong man follows from the important agency exercised by organic sensations in determining the psychical condition. We know that not only exterior phenomena acting on the sensorial organs that are directed to the outer world produce sensations in us, but changes of condition originating in the organism itself are also accompanied by sensations. The parts of the body that are by their situation withdrawn from the direct influence of external agents possess a special sensitiveness through which we perceive their changes of condition.—From "The Fear of Death," by M. Guglielmo Ferrero, in Appletons' Popular Science Monthly for December.

"HOW THE BIBLE CAME DOWN TO US" is the title of an article by Dr. Clifton H. Levy in the December number of the American Monthly Review of Reviews. Dr. Levy traces the history of the various versions of the Scriptures, presenting photographic reproductions of portions of the most celebrated manuscripts and printed texts. In view of the recent revival of interest in Biblical discovery and textual criticism, this attempt to give a popular exposition of the subject will doubtless be warmly welcomed.

THE AMERICAN MONTHLY REVIEW OF REVIEWS for December has several interesting features. Mr. Ernest Knaufft, editor of the "Art Student," contributes an elaborate study of "John Gilbert and Illustration in the Victorian Era;" Dr. Clifton H. Levy tells "How the Bible Came Down to Us," with a number of reproductions from ancient Biblical manuscripts and printed texts; Lady Henry Somerset pays a tribute to the late Duchess of Teck; an English officer in the Indian service writes about the Ameer of Afghanistan; Mr. E. V. Smalley discusses Canadian reciprocity, and Mr. Alex. D. Anderson summarizes the progress of the American Republics. There is also a 23-page illustrated department devoted to the season's new books, with an introductory chapter, by Albert Shaw, on "Some American Novels and Novelists." Altogether, the "Review" is not lacking in novelty or variety. The editor discusses the international questions growing

out of the seal negotiations with Great Britain and the Cuban situation. He advocates a firm policy on the part of the United States. Irresolution in the past, he says, has cost us much prestige and done us serious harm. "There is nothing that the world respects so much in a nation's attitude and policy as firmness and fixity of purpose. If the people of the United States wish to intervene in Cuban affairs they have the most abundant moral justification for doing so. The only thing that could condemn such a movement on the part of our country would be doubt in our minds as to the wisdom or justice of our policy. American intervention in Cuba at any time within the past year and a half would have been accepted by the whole world with even less of cavil or criticism than the Russian intervention on behalf of Bulgaria twenty years ago."

THE END OF THE HUMAN RACE.—One of his learned and thoughtful articles is contributed on this subject by the Marquis de Nadaillac in a recent number of the "Correspondant." Making anew the calculation of the increase of population as compared with the increase of the food supply, he reaches the gloomy conclusion that in a few centuries there will inevitably be too little food to supply all the mouths. He compares the statistics of most civilized nations, and they appear to confirm his apprehensions. For instance, Russia alone, at its present rate of births, will in one hundred years be obliged to feed eight hundred million persons! What, he asks, can stem this overwhelming tide of population? He gives up the problem, and says that we must leave it to God, a solution which is more creditable to his piety than to his position as a scientist. The real solution is to educate men and women to the point where they will not recklessly produce offspring; nor yet ruthlessly prevent them, as is the case now in some departments of France, where the population is actually diminishing, although the wealth is above the average. Unfortunately, modern prejudice stands in the way of a fair and full discussion of this solution.—D. G. BRINTON, University of Pennsylvania.—From Science.

"THE CENSUS OF 1900" forms the theme of a brief but timely contribution by the Hon. Robert P. Porter to the pages of the December "North American Review." Among the first acts of the Fifty-seventh Congress will be in all likelihood the passage of a preliminary law for the purpose of putting in motion the machinery for taking the twelfth census. Mr. Porter, who, since the

death of General Walker, is the only living superintendent of the United States census, presents in connection with this fact several important suggestions which carry with them the weight of a large experience.

DEGENERATE FAMILIES.—There is a paper on "The Causes of Poverty," by the late Francis A. Walker, in the December "Century." Gen. Walker says:

"The true predominant causes of pauperism, as of crime, have been strikingly and painfully brought out in tracing the history of a few families. Three cases will suffice. The reader remembers the investigation of the Jukes family in New York State. Mr. Dugdale estimated that the members of this family, descendants of one worthless woman or intermarried with her descendants, have in seventy-five years cost the State, as criminals and paupers, a million and a quarter of dollars. The history of a Kentucky family founded in 1790 has been traced to include the character and conduct of a host of its members by descent or by sexual alliance, legitimate or illegitimate. Among these have been 121 prostitutes. Thieving and beggary have made up the lives of most of the remainder. Those who try to do something better for themselves prove unable to perform hard labor or to endure severe weather. They break down early and go easily to the poorhouse or the hospital. From Berlin we have the history of another criminal and pauper family, the descendants of two sisters who lived in the last century. Their enumerated posterity numbers 834. Of these the history of 709 has been traced with tolerable accuracy. They embrace 106 illegitimate children, 164 prostitutes, 17 pimps, 142 beggars, 64 inmates of poorhouses, and 76 who have been guilty of serious crimes. Still other instructive cases are given, in one of which nearly all the inmates of a county poorhouse have been found to be related in blood.

"THE HOME JOURNAL" is the exponent of that literary and art culture which gives grace and refinement to social intercourse —a society journal in the best sense of the term. Out-of-town readers will find the best life of the Metropolis reflected in its pages. It is an international journal and by its foreign correspondence and essays brings its readers *en rapport* with the social life of the great European centers. The "Home Journal" addresses its editorial and advertising columns to people of culture and fashion. It is essentially a paper for the home, a home journal,

and the only Home Journal. $2 a year. Morris Phillips & Co., 231 Broadway, New York.

"THE GEORGIA JOURNAL OF MEDICINE AND SURGERY," Savannah, Ga., announces that, beginning with the January number, henceforth it will contain from 75 to 100 pages.

THE DISINFECTION OF BOOKS.—At a recent discussion of this subject, Dr. John S. Billings, the director of the New York Public Library, said, in part:

"At an investigation made by the State Board in Iowa three years ago it was found that six cases of scarlet fever were undoubtedly communicated through circulating library books. Other diseases may be communicated in the same way. There is not much danger of this from the edges of cards, although they are foul and filthy, and undoubtedly filled with bacteria, more especially with those of skin diseases. In order to prevent any possibility of the diseases through books it is necessary to destroy the bacteria.

"We cannot use the method of applying 210° Fahrenheit of dry heat. That would curl the leaves and injure the bindings. Much less can we apply 212° Fahrenheit of wet heat. We cannot apply a solution of corrosive sublimate or zinc chloride. The fumes of burning sulphur are both inadequate and undesirable.

"Two years ago, when in Philadelphia, I suggested to one of the fellows in the laboratory that it would be desirable to seek a new method. Formaline was known to be a destroyer of bacteria, and he set to work on that. This can be purchased in a drug store, or may be made by burning methyl alcohol. A saucer of formaline, a book which had been infected with the bacteria of diphtheria, another with scarlet fever, and another with erysipelas were placed under a bell jar. The experiment showed that one cubic centimetre of formaline to 300 cubic centimetres of space would thoroughly disinfect any book in fifteen minutes."

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PREVENTIVE MEDICINE IN PENNSYLVANIA.*

By BENJAMIN LEE, M. D., Secretary.

To the Honorable the President and Members of the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania.

It is with sincere pleasure that your Secretary is able to report that he has received from his Excellency the Governor notification that he has reappointed Drs. Pemberton Dudley and George G. Groff as members of the Board, their terms of office having expired by limitation. The Board and the State are to be congratulated that they still continue to enjoy the services of gentlemen so well qualified, not only by natural ability and professional education, but by long experience in the details of the work of the Board, to discharge the duties of this branch of the public service. Your Secretary desires here to acknowledge the aid which he has received from their wise counsels, and the readiness with which, although serving entirely without compensation, they have habitually sacrificed their private interests to second him in his efforts to promote the health of the people of the State.

At the regular meeting in July, Dr. Groff was again elected President of the Board, this being the second time that this honor has been conferred upon him.

On the second day of February, 1897, the State Capitol at Harrisburg took fire and was entirely destroyed with the most of its contents. This disaster not only deprived the Board of its place of meeting at the capitol of the State, but caused it a loss of about $544 in furniture, books and stationery. Many of the books it will be impossible to replace. The Board should make earnest efforts

*Abstract of the Thirteenth Annual Report of the Secretary of the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania, and Sanitary Conventions. Presented November 11, 1897.

to induce the commission for the rebuilding of the capitol to provide for its permanent use a commodious, well-lighted, conveniently arranged suite of rooms, consisting at least of an anteroom, a room for the meetings of the Board, and a room for that sadly neglected but most essential department of the work of the Commonwealth, the Bureau of Vital Statistics. This last-mentioned room should contain fireproof cases for protecting the returns, which will soon become quite voluminous and will be of great value.

Indirectly, however, the burning of the capitol worked much more serious detriment to the interests of the Board than the destruction of its office and property. Entailing a very considerable immediate outlay in providing a temporary place of meeting for the Legislature, then in session, and a far greater prospective expenditure in rebuilding the ruined edifice, this disaster created an uneasiness in regard to the financial condition of the State Government, and inspired the members of the Legislature with a zeal for indiscriminate retrenchment, as unfortunate in its results in some directions as it was wise and commendable in others. So far, then, from being met in a spirit of enlightened liberality by the members of that body, the Committee on Sanitary Legislation of the Board was obliged to content itself with acting on the defensive. Only by unremitting efforts did it succeed in obtaining the same meagre appropriation which has been doled out to it in the past, in preventing the repeal of certain acts of much importance to the sanitary welfare of our people, and in preventing the enactment of others which were fraught with danger to the State.

THE ANTI-VACCINATION LEAGUE.

One of the most pernicious of the attempts to undo what has been previously well done was that to repeal the clause of the Act of 1895 "For the Better Protection of the Public Health," which makes vaccination a pre-requisite to the admission of a child to school. It is the existence of such a law in Germany that has almost banished smallpox from that empire, and enabled her to go through her great struggle with France with a loss from that disease so trifling as not to be worth mention. It is the absence of such a law in France that during the same period caused her military hospitals to become pest-houses and added most seriously to the disablement and the death-rate of her armies. It is the absence of such a law in the city of Gloucester, England, which has made

possible at the end of this nineteenth century an epidemic almost rivalling in its horrors those of the Middle Ages. It is the absence of such a law in the State of Alabama, whose Chief Health Officer, impatient at the discussion of the question of vaccination in the National Conference of State Boards of Health, declared a few years since that smallpox was almost unknown in his State, that has led, during the past year, to the occurrence of many hundred cases with a proportional mortality within her borders.

In spite of this constantly recurring evidence of the value of vaccination, the Anti-Vaccination League continues its deplorable efforts to undermine public confidence in the well-established value of this preventive measure. Under its auspices the Legislature was deluged with petitions for the repeal of the clause referred to. It must unfortunately be noticed in passing that medical practitioners, actuated by an unfounded belief that the law in some way interfered with their prerogatives and derogated from their dignity, were to be found to append their names to these harmful memorials. Concerted action on the part of Boards of Health throughout the State, however, convinced the members of the Legislature that the Act was approved by the thinking and enlightened majority of our people. The action of the "Associated Health Authorities" of the State and of the State Sanitary Convention strongly confirmed this conviction. Your Secretary went directly from the meeting of the latter body at Johnstown, to Harrisburg, on the day on which the final vote was taken, and had the pleasure of being present when this formidable attack upon the sanitary defenses of the State was defeated.

DISPOSAL OF GARBAGE.

Equally unwarranted, although perhaps not so deadly in its promise of evil, and based solely on greed of gain, was the attempt to deprive Boards of Health of cities of the right to decide how garbage should be disposed of. Foiled by the wisdom of that eminent jurist, Judge Thayer, in their attempts to compel the health authorities of one of our great cities to grant permits to collect garbage to all applicants regardless of the manner in which it was to be disposed of, those interested in making money out of this material tried to have his decision set aside by act of Legislature. This move was checkmated. It is to be hoped that this settlement of the question will lead to the abandonment of the practice which prevails to so large an extent in this State, and which has been

the cause of so many and so well-founded complaints to this Board, of the establishment of immense piggeries in the neighborhood of large towns, having for their object the consumption of refuse of this nature. Until this result is reached, however, the regulation on the control of piggeries will be enforced in order to diminish the evil as much as possible.

VITAL STATISTICS.

It is difficult to conceive what class of citizens interested themselves in the movement to deprive Boards of Health of the right to require the registration of marriages, always inherent in those bodies. Such an effort was successfully made, however, so far as the Legislature was concerned, and this in face of the vigorous and enlightened stand taken by the Governor in his message at the opening of the session in favor of greater completeness in our system of registration of vital statistics. Your Secretary addressed a remonstrance to his Excellency conveying the sentiments of the Board as averse to the act, and it was vetoed. The State is to be congratulated that this retrograde step in legislation was counteracted.

It is with less satisfaction that it must be reported that the effort of the Board to obtain a special appropriation for the work of the Bureau of Vital Statistics, which would give that department a more substantial existence than simply one on paper, and provide the machinery necessary to enable its superintendent to adequately discharge the duties by law assigned to him, was entirely unsuccessful. It is unnecessary to dilate at this time on the humiliating spectacle presented by this great, rich and supposedly enlightened Commonwealth when compared with other States in this particular.

CONTROL OF BONE-BOILING ESTABLISHMENTS.

Among the industries which, if carelessly conducted, or situated in populous neighborhoods, invariably cause annoyance, and vitiate the atmosphere to such a degree as to cause deterioration of health in those compelled to breathe it constantly, are bone-boiling establishments. By an act of the last Legislature, all such establishments are placed under the control of the State or local Boards of Health, and can be established or conducted only by permission of those bodies and in accordance with their regulations. Your Secretary has addressed a circular letter to all Boards

of Health and to all the County Medical Inspectors of this Board, insisting on the enforcement of this law, and calling for regular reports of such establishments from these officials. With this letter were inclosed copies of the Act and of the Regulations of the Board on this subject.

SANITARY INSPECTION OF BAKERIES.

Through the efforts of that energetic and highly intelligent body, "The Woman's Health Protective Association of Philadelphia," a law was passed providing for the inspection of bakeries, bakeshops and similar establishments. The evidence collected through inspections, instituted by that association, of the filth and disease-breeding conditions under which our most important article of food was in many instances prepared, was so convincing that the Legislature could not fail to recognize the necessity for steps to correct this abuse. While the duty of conducting these inspections has been assigned to the Factory Inspectors, instead of Boards of Health, to whom it properly belongs, in common with house inspection and meat and milk inspection, yet we have reason to congratulate ourselves that the importance of the matter has been recognized by the Legislature, and that under the operation of the Act a great improvement has already been promoted in the sanitary condition of these places.

FAILURE OF MEASURE TO PROTECT PURITY OF STREAMS.

The combined efforts of water companies and water commissioners throughout the State to procure the passage of a bill to protect the purity of inland waters met the same fate that has befallen all such previous efforts. The settled decision of the Legislature appears to be that streams were intended to be sewers rather than sources of water supply for drinking and domestic purposes. When it is remembered that this is purely a question of dollars and cents, and there is no inherent difficulty in the way of purifying the fluid waste from all cities, towns and manufacturing establishments, before it enters a stream, the responsibility of permitting the continued sacrifice on the altar of mammon of so many lives as are positively known to be destroyed by the use of water from polluted streams is indeed a most serious one. The Mayor of Johnstown, in this State, a medical practitioner of high standing, thus sums up the money loss to his city in a single year from typhoid fever, one of the diseases thus caused:

"During the last year there have been twenty-one deaths from typhoid fever in Johnstown. At the average rate of mortality from typhoid in that city 21 deaths represent 200 cases of fever. It is estimated that the cash value to the community of the average life is $2,000. The average cost of burial at Johnstown is $30. The average duration of a case of typhoid that recovers is 43 days in Pennsylvania; the average value of the patient's time is $1 a day; and the average cost of medical attendance and nursing is $30 on a very low estimate. So that the Johnstown account stands thus:

Value of 21 lives at $2,000	$42,000
21 funerals at $30	630
200 cases, losing 43 days at $1 a day	8,600
Attendance and nursing, $30 a case	6,000
Cost of typhoid fever to Johnstown, 1896	$57,230

"If it were proposed that some one should be given the privilege of coming into a community and levying a tax on the people equal to the cost of a preventable disease for one year, there would be a general uprising. But if the community could substitute such a tax for the cost of a preventable disease, it would be the gainer. The tax imposed by preventable disease is one that should not be endured because it need not be endured."

The unusual number of complaints of pollution of streams by the refuse from tanneries, resulting in the destruction of large quantities of fish, and the production of nuisances by the stench from their putrefying bodies, the destruction of cattle, and in some instances, it has been charged, of human beings, has impressed upon the Board the necessity for special interference in this class of cases. It has therefore adopted the following:

Regulation for Preventing the Pollution of Streams and Other Public Waters by the Refuse and Sewage from Tanneries.

1. The depositing of hair, lime, flashings, trimmings, spent tan-bark and all other solid waste from tanneries in streams, ponds, lakes or other public waters, is absolutely prohibited, as entirely unnecessary, and because under certain conditions it becomes injurious to the public health.

2. All sewage produced by washing hides in any and all processes, as well as all spent tan-liquors, shall, before being run into streams or other waters used as public water supplies, be filtered through beds of gravel. This can readily be accomplished by setting the works a short distance back from the water.

3. In cases where sulphuric acid, chromic acid, or other acids or salts injurious to human health are employed in tanneries, they shall be recovered or neutralized before being thrown into any stream used as a public water supply.

The above regulation has been sent to the proprietors of 450 tanneries in this State, and it is expected that the coming year will witness a marked diminution of this source of pollution. Information has been received from the Surgeon-General of the Marine Hospital Service that many of the hides now brought to this country come from China, and that the processes of inspection there pursued are very imperfect. Investigation has shown that in the cases of that fatal disease, anthrax, which have occurred recently in the neighborhood of tanneries in this State, the hides treated at the time were from Chinese ports. It may be well for this Board to address a communication to his Excellency the Governor, requesting him to confer with the Secretary of the United States Treasury upon this subject, insisting upon a more careful scrutiny of hides at points of shipment, and the destruction of such as are found to be infected with the germs of this disease. It is, perhaps, as well to bear in mind that the majority of these establishments in this State are owned and operated by parties living outside of the State, to a great extent in New York and New England, to whom it is a matter of entire indifference whether our streams are rendered unfit for domestic uses and the watering of stock or not, and having no personal interest in the lives and health of our people. Farmers and others who have lost cattle in consequence of tannery pollution of streams have suggested that in some instances the cause of death might have been the impregnation of the water with arsenic, large quantities of that chemical being used in the curing of the Asiatic hides. Further investigation of such disastrous occurrences is necessary in order to elucidate this point. Your Secretary desires to acknowledge the kind co-operation of Prof. Leonard Pearson, State Veterinarian, in his efforts to arrive at definite conclusions in these cases.

Complaints of the pollution of streams and other water supplies have been received during the past year from forty-four localities, as compared with twenty in 1896. This fact speaks volumes for the necessity of appropriate legislation to protect the purity of our inland waters, as it indicates that manufacturing interests are encroaching more and more on the rights of the people, and especially of our agriculturists.

COMMUNICABLE DISEASES.

Smallpox.—But two outbreaks of smallpox have occurred during the year. These were at Pittsburg and McKeesport, Allegheny County. These cases were promptly conveyed to appropriate hospitals by the local authorities, all suspects were vaccinated, and no further spread of the disease took place.

Typhoid Fever.—The Board has been called upon for assistance in fourteen outbreaks of typhoid fever during the year, in seventeen localities. Again we note a diminution of cases reported as compared with the year previous. This would seem to indicate that the labors of the Board are at length bearing fruit.

Scarlet Fever.—The aid of the Board has been solicited in suppressing scarlet fever at twelve different points in seven counties. This is a diminution of two-thirds, as compared with the year 1896, and is very encouraging.

Diphtheria.—This infection, so far from abating, appears to be steadily on the increase, and is still of a very fatal character, notwithstanding the fact that many lives have been saved by the prompt use of the antitoxic serum. In 1895 the advice or assistance of the Board was sought from thirty-six different places, in 1896 from forty-seven, and during 1897 from sixty-two distinct and separate points. This is in a great measure due to the impossibility of inducing the ignorant classes to believe that the disease is contagious. The outbreaks have been in sixty-one places, in thirty-three counties. In all of the outbreaks the State Board, having been appealed to for assistance through the local boards, wherever such existed, and through its own inspectors where they did not exist, by advice in the former, and by direct exercise of its authority in the latter conditions, contributed largely toward the control of the contagion.

LEGAL OPINIONS AND DECISIONS.

Opinions and decisions on sanitary questions of considerable importance have been delivered in this and other States during the year. They are as follows:

Prohibiting the Admission of Unvaccinated Children to School.—His Honor, John B. McPherson, Associate Law Judge of the Dauphin County Court, in the case known as "Mary F. Nissley *vs.* Charles Holler, *et al*, Directors of the Second School District of Hummelstown Borough," decides that without the certificate of a

physician, as required by the statute, children cannot be admitted upon attendance at school.

In the case of "W. F. Sprague *vs.* A. F. Titus," and others, brought for the purpose of testing the constitutionality of the Act of 1895, entitled "An Act to Provide for the More Effectual Protection of the Public Health in the Several Municipalities of this Commonwealth," Judge Morrison, of Smethport, McKean County, decided that "municipalities," in the wording of the law, included townships as well as boroughs and cities.

Right of Boards of Health to Control Removal of Garbage Confirmed.—In the case of "the State of Connecticut *vs.* Orr," decided June 15, 1896, by the Judge of the Supreme Court of Errors, the decision is to the effect that the Board of Health has authority to pass an ordinance providing that no person shall collect and transport garbage without having first obtained a permit from the Board of Health.

Sustaining Dairy Inspection Ordinance of Minneapolis, Minn. —An opinion was given by the Supreme Court of the State of Minnesota, in the case of "the State of Minnesota, respondent, *vs.* Hans. C. Nelson, appellant," in which the dairy ordinance of the city, which provided for the inspection of all dairies from which milk is obtained for the city of Minneapolis, outisde of the city limits, and for the tuberculin test, was sustained.

Right of Boards of Health to Fix Salaries of Appointees Confirmed.—His Honor Judge Ehrgood decided, in the case of "the Board of Health of Lebanon *vs.* City Council," for back salary of the secretary, that the Board of Health and not Councils has the right to fix the salary of the officers. A second decision was also rendered in favor of the Health Officer of Lebanon, for back salary. In each instance the Council was compelled to pay the sum of $100.90 and costs.

Cardington Piggery Case.—The decision of the Court *in re* "the Citizens of Cardington *vs.* Lyster and Sons," for maintaining a piggery, was in favor of the complainants.

Power of Boards of Health to Employ Physicians and Liability of Counties.—In an action brought by a physician to recover from a county for services rendered and supplies furnished a pauper, the Supreme Court of Iowa holds, "Tweedy *vs.* Fremont County," October 29, 1896, that it must not only be shown that the patient was a pauper, but that his parents or other relatives liable therefor are unable to pay the claim. Conceding that his

inability to pay is made to appear, the fact that he is a pauper and a county charge does not show that there is no relative who is liable and able to pay it. It frequently happens, continues the Court, that the needs of a poor person are so urgent that relief must be furnished him at the expense of the county, for lack of time to compel relatives who are liable for his support to relieve him.. In such a case the person relieved is a county charge, although the county may be able to recover from his relatives the sum which it has paid on his account..

DISTRIBUTION OF CIRCULARS AND FORMS.

The number of precautionary and hygienic circulars in pamphlet form sent out during the year has been 15,908.

The number of boxes of circulars sent out during the year, each box containing from twenty-five to thirty circulars, has been 267.

The number of packages of documents, for the information of local boards, sent out during the year, each package containing forty-nine documents, has been 29.

The number of single documents sent out during the year has been 698.

The number of packages of stationery sent out during the year to County Medical Inspectors, Deputy Inspectors, members of the Board, etc., has been 38.

The number of other packages sent out during the year has been 22.

SANITARY CONVENTIONS.

THE ASSOCIATED HEALTH AUTHORITIES OF PENNSYLVANIA held its fourth annual meeting in Harrisburg, January 25 and 26, 1897. His Excellency Governor Hastings, presided, and made the opening address, in which he expressed the conviction that the time had come for collating the vital statistics of the Commonwealth, and for protecting our water supplies. He also considered that people residing in townships had as much right to protection against contagious diseases as those living in cities and boroughs. The attendance was large, and the papers and discussions of deep interest. The intense cold prevailing just at that time, however, prevented many from coming. Resolutions were adopted: Urging the importance of teaching practical hygiene and sanitation in the

public schools of Pennsylvania, especially in reference to communicable diseases, disinfection, pure food and pure water supplies; Favoring the regulation of the erection of school buildings by Act of Assembly; Urging the importance of increasing the appropriation to the State Board of Health; Protesting against the repeal of the clause in the contagious disease law of 1895 which makes vaccination a prerequisite for the admission of a child to school, and requesting the Legislature to make an appropriation to aid in defraying the expenses of delegates to the Association.

The formation of "County Associated Health Authorities" in Delaware and Luzerne counties was announced.

The report of the Committee on Legislation, Hon. Abram M. Beitler, chairman, was an able plea in favor of the enactment of laws for the purposes above rehearsed.

The effect of the meetings of this Association in strengthening the hands of local boards of health, stimulating public interest in sanitary reforms, and influencing legislative opinion, both State and municipal, cannot be over-estimated, and it is earnestly to be desired that health authorities throughout the State should more generally avail themselves of these opportunities for an interchange of views and the furtherance of their common interests.

Your Secretary read a paper before the meeting, entitled "Remarks on the New Disinfectant, Formaldehyde," which provoked a long and interesting discussion.

The tenth State Sanitary Convention was held in Johnstown, May 25, 1897. Unlike the Associated Health Authorities, these meetings have no continuous existence and are not confined to those in official positions. They are designed to be popular in their character and are in no sense medical conventions. Their objects are the popular presentation of facts, the comparison of views and the discussion of methods relating to the prevention of sickness and untimely deaths. The main design, therefore, is to disseminate a knowledge of sanitation and hygiene in a manner that will render these subjects easily understood by the public generally. They have been held from year to year in different parts of the State, and have undoubtedly been the means of awakening a wide public interest in these important matters.

The presiding officer was the Hon. A. V. Barker, President Judge, his Excellency the Governor of the State having been prevented by his duties in connection with the session of the Legislature from attending, a fact for which he expressed his regret in a

written communication. In his opening remarks his Honor alluded in a complimentary manner to the work of the State Board of Health in Johnstown, after the great calamity which visited the city in 1889. The address of welcome was delivered by his Honor George W. Wagoner, M.D., Mayor of Johnstown. The papers took a wide range and were listened to with deep interest.

The afternoon session of the second day was devoted mainly to the consideration of school hygiene.

The annual address before the State Board of Health was delivered on the evening of the same day by Prof. W. M. L. Coplin, of the Jefferson Medical College of Philadelphia, bacteriologist to the State Board of Health. The subject was "Practical Disinfection." It was treated in a thoroughly popular manner, and was illustrated by the stereopticon.

Your Secretary contributed a paper on "The Sanitary Aspects of the Bicycle."

Resolutions were passed: Calling the attention of the United States Government to the constant introduction of a contagious disease of the eyes, known as trachoma, into this country by immigration from Europe, and requesting that measures be taken at ports of entry to prevent such introduction; Protesting against the repeal of the law requiring school children to be vaccinated; Requesting the Legislature to increase the appropriation to the State Board of Health, and to give that body definite powers for preventing the pollution of public waters.

A paper of great value, both scientifically and practically, was contributed by the engineer member of the Board, Mr. John Fulton, of Johnstown, under the title, "Dams, their Construction, Use and Dangers." This essay was fully illustrated, and gave an explanation at once scientific and lucid, of the engineering blunders which led up to the awful catastrophe of 1889.

"The Sanitary Conditions of the Conemaugh Valley" were interestingly described by Dr. W. E. Matthews, Medical Inspector to the State Board of Health for Cambria County. It may be said in passing that the movement for the consolidation of all the boroughs clustered in this mountain valley into a large and flourishing city, received a strong impetus from the suggestion of this Board that all of these municipalities and villages should unite in the formation of a sanitary association to be known as the Board of Health of the Conemaugh Valley. This suggestion is now to a great extent realized in the active and intelligent Board of Health of the city of Johnstown.

THE SECTION ON STATE MEDICINE OF THE AMERICAN MEDICAL ASSOCIATION, HELD IN PHILADELPHIA, JUNE 1-4, 1897.

This important section held six sessions during the meeting of the Association, at which forty-six papers were presented. Among the most interesting of these may be mentioned a paper, entitled "Some Considerations of the Import of the Occurrence of Pathogenic Spirilla in the Waters of the Delaware and Schuylkill Rivers, at Philadelphia," by Dr. D. H. Bargey, Assistant Chemist of the Laboratory of Hygiene of the University of Pennsylvania, also Chemist to the State Board of Health. It will be remembered that this gentleman has been making the chemical analysis of drinking waters for the State Board of Health for the past few years. In the course of this paper Dr. Bargey demonstrated the presence in the waters of the Delaware and Schuylkill of organisms very closely resembling those of Asiatic cholera. Your Secretary suggested in the course of the discussion the possibility that there might be a connection between the presence of these germs in the drinking water of Philadelphia and the occurrence of that disturbance of the digestive tract which has been termed "Winter Cholera."

"The Relation of Railway Companies to State Boards of Health" was ably discussed by Dr. G. P. Conn, former Secretary of the State Board of Health of New Hampshire, Concord, N. H.

The Supervising Surgeon-General of the United States Marine Hospital Service, Dr. Walter Wyman, gave an interesting description of the present administration of the quarantine department of the country.

One session, at which twelve papers were presented, was devoted entirely to the consideration of the contagiousness of tubercular consumption and its prevention. To this your Secretary contributed a paper, entitled "The Present Attitude of Sanitarians and Boards of Health Toward Pulmonary Consumption," which is hereto appended. Another session, at which eight papers were presented, was devoted to the position of alcohol in modern medicine.

CONFERENCE OF STATE AND PROVINCIAL BOARDS OF HEALTH OF NORTH AMERICA.

The twelfth annual meeting of this association, composed of delegates from State Boards of Health, and therefore semi-official in its character, was held in the hall of the House of Representa-

tives, Capitol Building, Nashville, Tenn., August 18 and 19, 1897. In order that the title of the Association might more aptly represent its composition, which now includes the Dominion of Canada and the Republic of Mexico, the name was at this meeting changed from "National Conference of State Boards of Health" to "Conference of State and Provincial Boards of Health of North America." Your Secretary read a paper in reply to the question proposed by the Provincial Board of Health of Ontario: "What attitude are State Boards of Health prepared to take regarding the need for general inspection of all dairy cattle, and what are the details of any practical scheme for inspecting (*a*) Herds supplying public milk, (*b*) Dairy produce, and (*c*) For dealing with animals which react to the tuberculin test."

The report of the committee on the "Transportation and Disinfection of Bodies Dead of a Contagious Disease" favored a relaxation of the present prohibitory rules in consequence of recent advances in embalming and disinfection. The report was approved and ordered to be transmitted to all State and Provincial Boards of Health for their information and consideration, with the request that they take such action as they deem best and report to the Conference at the next meeting.

The report of the "Committee on Vaccine Farms" referred in a very complimentary manner to the thorough and able report of the Assistant Bacteriologist of our Board, Dr. Robert L. Pitfield, of his inspection of vaccine farms and antitoxin plants throughout the United States. The report strongly urged the necessity for strict State supervision of all such establishments.

Your Secretary was accorded the high honor of being elected President of the Conference for the ensuing year.

The next meeting will take place in Detroit, Mich., July 30, 1898, in connection with the twenty-fifth anniversary of the establishment of the Michigan State Board of Health. As a compliment to a sister State the hope is expressed that our own Board may be fully represented on that occasion.

Your Secretary embraced the opportunity afforded by his presence at Nashville to superintend the installation of the exhibit of our own Board at the Tennessee Centennial Exposition. This was essentially the same as that made by the Board at the Atlanta Cotton States Exposition, and was as follows:

One complete set of the Annual Reports of the Board, bound in leather.

One complete set of the circulars of the Board, bound in leather.

One complete set of the forms and regulations of the Board, bound in leather.

One complete set of the sanitary conventions of the Board, bound in leather.

One report of the operations of the State Board of Health at Johnstown.

One set of sanitary and meteorological maps, framed.

One set portable apparatus for the chemical examination of drinking water.

One set portable apparatus for the bacteriological examination of drinking water.

One set of tubes for taking specimens of drinking water from hydrants.

Fifty paper boxes, containing complete sets of circulars.

He also carefully studied the exhibits in the Department of Hygiene, finding much that was of interest, especially in that of the Museum of Hygiene of the United States Naval Department.

BRITISH MEDICAL ASSOCIATION—SECTION ON PUBLIC MEDICINE.

For the first time in its history, the British Medical Association met on this side the Atlantic in 1897. The meeting was held in the city of Montreal, Canada, August 31—September 3, inclusive. By special invitation of the Section on Public Medicine, and as a delegate from this Board, your Secretary was present and took part in the very interesting discussions of that section.

The President, Dr. E. P. Lachapelle, President of the Board of Health of the Province of Quebec, chose for the subject of his address "The Progress of Sanitation in Canada," which demonstrated the fact that our brethren across the border are at least keeping pace with us in the march of reform in sanitary administration. Twenty-five papers, all of considerable merit, were presented, and the stated discussions were of great value and interest. Nine of the papers contributed were by physicians from the United States.

The address on Public Medicine, before the entire Association, was delivered by Dr. Herman M. Biggs, Bacteriologist of the Board of Health of the city of New York. The presence of Lord Lister, to whom sanitarians all over the world, in fact the world itself, owes a debt of gratitude for his practical demonstration of the ubiquity of disease germs and the dangers to human health and life therefrom resultant, added lustre to the occasion.

THE TWENTY-FIFTH ANNUAL MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

This Association, the largest and probably the most important organized body of sanitarians in the world, held its twenty-fifth annual meeting in the city of Philadelphia, October 26-29, 1897, on the invitation of the State Board of Health, of his Honor the Mayor of Philadelphia, and of the President of the City Board of Health Dr. William H. Ford.

The civic authorities vied with the citizens and institutions of science and learning, in extending to their distinguished guests a reception worthy the reputation of Philadelphia, both for generous hospitality and for appreciation of unselfish labors for the public good. His Excellency the Governor was prevented from extending the address of welcome on behalf of the Commonwealth by the decease, just before the meeting, of one intimately connected with him in professional life. His Honor, Mayor Warwick, welcomed the Association cordially in the name of the city. This Association, as is well known, is international in its organization, comprising members and delegates from the Dominion of Canada and the Republic of Mexico, as well as the United States of America. It was fitting, therefore, that the United States Government should recognize the importance of the occasion by sending delegates from its different departments, and providing vessels to convey the members on their visits of inspection to the quarantine stations on the Delaware River and Bay.

Thirteen formal reports of committees and forty-one papers were presented, the sessions extending over four complete days.

The address of the President, Dr. Henry B. Horlbeck, Health Officer of Charleston, S. C., was devoted to two principal points—a history of the Association and a discussion of the yellow fever problem as at present affecting the people of the South. The suggestion was made that Congress be urged to send experts in medicine and bacteriology to Havana to study this disease, especially in relation to its causation and early diagnosis, in order to arrive at such definite knowledge as will enable us to prevent it from obtaining a foothold in our cities. This recommendation was subsequently acted upon favorably by the Association. It may also be added that the Philadelphia Maritime Exchange has endorsed the resolutions of the Association, and has notified all commercial bodies throughout the United States of its action in

the premises, in order to bring their combined influence to bear upon the National Government. The blow which has befallen New Orleans in the present epidemic is a most serious one, utterly paralyzing business and involving a loss of many millions of dollars.

One of the most valuable of the committee reports was that on the "Disposal of Garbage and Refuse," by the former engineer member of our Board, Rudolph Hering, C. E., chairman of the committee. This report contained the latest results arrived at in European cities, notably Berlin and Hamburg, where experiments have been made on a scale of great magnitude. It may be said in a general way that the conclusions point to cremation as the only successful and, with properly constructed furnaces, the most economical method of disposal. Several valuable papers were presented on Formaldehyde, which, while they did not impair our confidence in the value of that agent, developed the fact that the best method of its development and application had not yet been reached, and that its penetrative power, although greater than that of any other gaseous disinfectant, was not quite what had been claimed by its enthusiastic supporters.

Papers were presented by the following-named members or appointees of this Board:

On "Striking Advances in Sanitation," by George G. Groff, President of the State Board of Health of Pennsylvania.

On "The Organization of College and Private Laboratories, with a view of rendering them of the greatest use to the medical profession and the sanitary authorities," by Dr. W. M. L. Coplin, Professor of Pathology and Bacteriology of the Jefferson Medical College, Philadelphia; Bacteriologist to the State Board of Health of Pennsylvania.

On "The Official Control of Plants Yielding Biological Products, Particularly Vaccine Virus," by Dr. Robert L. Pitfield, Assistant Bacteriologist of the State Board of Health of Pennsylvania.

On "How to Prevent Typhoid Fever in Rural Districts," by Dr. Harvey B. Bashore, Medical Inspector of the State Board of Health of Pennsylvania.

On "Bovine Tuberculosis in its Relation to the Public Health," by Dr. D. H. Bargey, First Assistant, Laboratory of Hygiene, University of Pennsylvania.

On "Uniform and Co-operative Health Laws," by Dr. S. P. Heilman, County Medical Inspector of the State Board of Health of Pennsylvania.

Your Secretary was complimented by being elected First Vice-President of the Association.

PROPOSED MOUNTAIN SANITARIUM FOR CONSUMPTIVES.

On the 5th day of December last, your Secretary, in company with Dr. Lawrence F. Flick and Dr. Guy Hinsdale, members of the Pennsylvania Society for the Prevention of Tuberculosis, and Dr. T. A. Knopf, of New York, a physician who has made a special study of institutions for the treatment of consumption or tuberculosis, both in this country and in Europe, visited White Haven, on the Lehigh Valley Railroad, in this State, with a view of inspecting various locations reported as being suitable as sites for a sanitarium for tuberculosis.

The project is one which commends itself to this Board, not from its charitable side, but as a step of great importance toward the eradication of this most fatal of all diseases. Through the courtesy of the Lehigh Valley Railroad Company a special train was put at our disposal, and points were visited near White Haven, Glen Summit and Bear Creek, within a radius of from twenty to thirty miles. The place which appeared to present the greatest advantages was situated quite near White Haven, a borough composed of educated and progressive people, and in touch with all the great railroad systems of the State. This is an important matter, as it would diminish the sense of isolation on the part of the patients, attendant upon removal to a wilderness or a dense forest remote from civilization and difficult of access. The point selected is about 1,225 feet above the level of the sea, and 150 feet above the Lehigh River. "Green Mountain rises gently from the borough of White Haven until at an elevation of 100 feet above the town it forms a plateau, a few hundred feet in width, stretching westward indefinitely. It is on this plateau that it is proposed to locate the sanitarium. The prevailing winds of this locality are northwest, and the sanitarium would be protected from them by Green Mountain, which rises rather abruptly from the plateau some 400 feet, and passes westward continuously with the plateau. It thus affords admirable shelter from the wind. The sun exposure is all that could be desired. The outlook is to the south, and the plateau is bathed continuously with sunshine, from daylight to

dark. The view is out over a wide stretch of wilderness, east, west and south. From the top of Green Mountain there is a charming prospect toward every point of the compass. The soil is porous, and rains, however slight, are speedily carried down the declivity or so thoroughly removed by percolation as to prevent the rendering of the atmosphere humid, as it would be under other circumstances. With the exception of a clearing on the plateau, which is occupied as a farm, the mountain side is wooded. It is the natural home of the pine, though the extensive lumbering operations which brought White Haven into being have long since brought about an almost entire disappearance of this beneficent tree, whose varied products, by some strange chemistry of nature, have ever been found to be so healing in affections of the respiratory tract.

"For purity of atmosphere the locality is up to a high standard, and is pronounced practically free from miasmic and malarial influences.

"The condition of dry atmosphere is fairly present. The fogs are not frequent, nor are they extensive or continuous. They mostly originate in the condensation which takes place in the moisture arising from the river, but they do not last long nor do they usually reach to the plateau."

The tract consists of several hundred acres, and it has been offered free of expense and incumbrance to those who are interesting themselves in the enterprise, namely, the members of the Pennsylvania Society for the Prevention of Tuberculosis, on the simple condition that they shall raise the funds for building and equipping the institution. The matter having been brought to the notice of the Board of State Charities, from the fact that it is intended to make this more especially a refuge for the consumptive poor of our large cities, that body recommended an appropriation of $30,000.00 provided a like amount could be raised by private subscriptions. The Committee on Appropriations of the Legislature, however, reported the bill negatively. The movement having once been inaugurated, however, will not be suffered to drop. This Board might well lend its influence in furtherance of an undertaking fraught with such immense possibilities for the protection of the health of our people. It is also desirable that the climatic advantages afforded by the elevated plateaus of the Appalachian range, which completely traverse our State, not only for the class of invalids referred to above but for health seekers generally, should

be brought more prominently to the attention of the medical profession and of the public.

DR. WILLIAM FORD.

Your Secretary would be doing violence to his feelings did he fail to note the loss sustained by the cause of sanitary progress in this Commonwealth by the death of Dr. William H. Ford, the President of the Board of Health of Philadelphia. For more than a quarter of a century his best efforts were given without stint to the discharge of his duties as a member of that Board, of which he was for the last eleven years of his life the presiding officer. Scholar, patriot, philanthropist, sanitarian, his life was consecrated to the service of humanity. His literary contributions to sanitary science, known all over the continent, were marked by careful and conscientious study, practical sagacity and elegance of style. Well did the Mayor of Philadelphia testify: "A more honest, conscientious and devoted public servant I never knew." May his bright example stimulate those whose privilege it has been to be associated with him to take up the work which he surrendered only with his last breath, and carry it on with renewed diligence and zeal.

BENJAMIN LEE, Secretary.

ADULTERATION OF BEER GRAINS.

Consul W. HENRY ROBERTSON, of Hamburg, under date of July 3, 1897, reports: After a careful investigation of the whole subject, I had the honor, under date of March 12, 1897, to forward a lengthy report to the Department of State upon "Dried beer grains as cattle food," showing that not only was there a valuable and rapidly growing market in Germany for this article for our brewers and driers of these grains, but that our farmers were throwing away great advantages in allowing such a cheap and excellent cattle food to be exported abroad instead of using it to the fullest extent on our own farms, where one hears so much of the scarcity and high cost of food for animals.

This report, although it has not yet appeared in the monthly Consular Reports, has been favorably noticed by the United States press, and shipments of dried beer grains to Germany have steadily increased. Unusually large orders have been given for the future, and I happen to know that one firm alone here has some 3,500

tons now under way from New York, with thousands more to be contracted for. It has been disappointing, however, to learn from an importer who has recently determined to deal heavily in this article that some of his initial consignments have fallen far below samples and show an unscrupulous admixture of the goods with ground Indian corn, in order to increase the weight of an ordinary light substance. Leaving out the dishonesty of the matter, nothing could be more shortsighted. The Germans, above all other peoples, are wedded to scientific methods in all things. They have more faith in the veracity of chemical analysis than in that of figures, for they know that, while "figures never lie," liars sometimes figure. A chemical test is, therefore, applied to everything that admits of it, and it takes a very simple process to detect the adulteration of such an article as beer grains. In fact, the addition of maize is evident to the naked eye. It is not necessary to claim that the admixture renders the food dangerous to health. It is sufficient that it is made with a substance that reduces the requisite percentage of protein and other fattening properties. The Germans could just as well import Indian corn and be done with it; but they do not want this. They have found dried beer grains a cattle food preferable for fattening purposes to Indian corn, and they want no other when they order it. They prescribe that it shall show such and such a percentage and composition, and they will accept nothing that does not fulfill the conditions of their orders. The result is that, unless these shortsighted methods of admixture are immediately stopped, our entire export trade in this article, which ought to have such a brilliant future before it (ten years ago our breweries had to pay some one to cart the grains away), will be permanently destroyed, not only for dishonest, but for honest exporters. Once given a bad name in this market, it will never recover, and its fate will be a just one. Most articles, in whatever condition they may be, can be put to one use or another; but it is different with the beer grains, which can not be sold at any price whatever if once adulterated. Already, news has been received here by one of the leading dealers that there is an organized determination on the part of some New York exporters to mix ground Indian corn with their shipments. I am authorized to say that, in all cases of impure goods, drafts will be protested and shipments totally refused. The result will be heavy losses and costly lawsuits to our exporters. I to-day read a letter of one of the largest local dealers to an importer, warning him that he will not accept goods

that are not thoroughly pure and up to conditions of order, and that he will cancel all orders heretofore given and deal elsewhere. Owing to the fact that we do not extract as much of the substance of the barley in the manufacture of our beers, American dried beer grains have the important advantage over those of England and Germany of containing about 33 1-3 per cent. more of protien, or fatty properties. It is, therefore, all the more to be regretted that such an advantage should be negatived by adulteration to gain a little more weight.

I have taken occasion in several previous reports to the Department on the subject of the introduction of our food products into the German market—and what is true of Germany is true of Europe and the world over—to repeatedly point out the necessity on the part of our farmers and exporters of having their wares so raised, prepared, and shipped as to leave no opportunity whatever for complaints against them. They should, above all things, be healthful, and should fully conform to sample and any conditions of analysis. The battles which our products are having to fight just now in European markets are too unequal and unfair for us to send any but our purest and most vigorous representatives into the strife. If we ever wish to gain such an enlightened trade as that of European countries, we must get rid of the idea that we can make this a dumping ground for such things as we cannot dispose of elsewhere. On the contrary, the merest novice in business tries to gain a new customer with his most tempting wares.

A PRACTICAL PATIENT.

A physician calling one day on one of his patients who was afflicted with the gout, found, to his surprise, the disease gone, and the patient rejoicing in his recovery over a bottle of wine. "Come along, doctor," exclaimed the valetudinarian, "you are just in time to taste this bottle of Madeira; it is the first of a pipe that has just been broached." "Ah!" replied the doctor, "these pipes of Madeira will never do; they are the cause of all your suffering." "Well, then," rejoined the gay incurable, "fill up your glass, for now that we have found out the cause, the sooner we get rid of it the better."

WATERED MILK.

By JOSEPH H. GEISLER, Ph. C., F. C. S.

It is not the purpose of this article to find fault with the cow or with the "town pump" in watering milk, but to explain briefly how the percentage of added water is ascertained, inasmuch as juries, lawyers and judges so frequently find great difficulty in comprehending the data of milk analyses.

Milk analyses commonly state the percentage of water, total solids, fat and the ash. The total solids are the residue left after evaporating all the water, and consist of the fat, caseine, albumen, milk, sugar and ash. The latter is also frequently termed "salts" —saline or mineral matter.

The present New York State law demands that milk shall not contain more that 88 per cent. of water, nor less than 12 per cent. of solids, nor less than 3 per cent of fat. If the analysis shows the milk to contain more than 88 per cent. of water, or less than 12 per cent. of solids, or less than 3 per cent. of fat, the law deems such milk adulterated. Bearing this in mind, let us take for illustration the results of an analysis of milk, which showed:

		Per cent.
Water		89.50
Fat	3.00	
Caseine and albumen	6.88	
Ash	.62	
Total solids	——	10.50
		100.00

The ash is frequently not estimated. For analysts to calculate the milk as watered in such cases is an unwarranted and questionable license. In the absence of evidence to show that the above milk has been skimmed, the data would indicate that the milk had been watered at least 14.2 per cent.

Since the law admits the possibility of 88 per cent. of water in pure milk and the analysis disclosed the presence of a total of only 89.50 per cent. of water, it generally puzzles the uninitiated how it is possible to state that the milk had been watered 14.2 per cent., as the excess over the limit set by law is only 1.5 per cent. Whence the extra 12.7 per cent.?

The simple rule for calculating the adulteration takes for its basis the minimum limit of solids adopted by law, namely, 12.00 per cent., and may be briefly stated as:

$$\frac{100\,(A-B)}{B} = X$$

in which

A represents the percentage of solids in pure milk as defined by law.

B the solids found by analysis.

X the percentage of water added to the original milk.

It must be evident that the addition of water dilutes the total solids and thereby lessens the percentage of the same. To make this clear and at the same time make the above rule more comprehensible, I will present the following practical illustration:

Leaving out of consideration the slight difference in specific gravity between water and milk, let us take 100 pounds of milk of minimum quality (namely, 88 per cent. water and 12 per cent. solids) as the basis for adulteration, and add to it an *equal volume* of water, say 100 pounds.

It is evident that the milk has been adulterated 100 per cent.

The original milk having the composition 88 per cent. of water and 12 per cent. solids contained:

88 pounds of water.
12 " " solids.

A chemist analyzing the adulterated milk (*i. e.*, after the addition of the 100 pounds of water to the original milk), would find and report the mixture to contain—

	Per Cent.
Water	94
Solids	6
	100

With the statement that the original milk had been adulterated by the addition of 100 per cent. of water. The reason for this is apparent. The 100 pounds of original milk contained 88 pounds of water and 12 pounds of solids, to which were added 100 pounds of water, making a total of 200 pounds of mixed or adulterated milk. The mixture therefore consists of 188 pounds of water and 12 pounds of solids. In other words, the solids have been diffused through 200 pounds of mixture. This, reduced to simple per-

centages (or parts per hundred), necessarily makes the following exhibit:

	Lbs.			Per Cent.
Water in original milk . . .	88	Div. by 2:	=44 lbs. water	
Water added	100		=50 lbs. water	=94
Solids in original milk . . .	12		= 6 lbs. solids	= 6
Total mixture	200		=100 lbs.	100

Consequently, the 94 per cent. of water as stated in the analysis, showing an excess of 6 per cent. over the maximum amount allowed by law (namely, 88 per cent.), does not indicate a mere excess of 6 per cent. of water, but an actual addition of 100 per cent. of water to the original milk. Sight is lost of the fact that in the adulterated sample the "88 per cent." is not exclusively water of the original milk, but in part some of the added water, as clearly shown above.

Addition of water, as above stated, simply dilutes the solids and distributes them through the mixture. The larger the addition of water the greater the dilution of solids, so that the addition of water and loss or diminution of percentage of solids bear a definite ratio to each other. For this reason the solids are taken as a basis of the calculation for estimating the percentage of added water.

Referring to the first analysis above and making the necessary substitutions in the formula—

$$\frac{100\,(A-B)}{B}, \text{ we have: } \frac{100\,(12-10.5}{10.5} = \frac{100 \times 1.5}{10.5} = 14.2$$

per cent.

Hence the excess of 1.5 per cent. of water (89.5—88.0 = 1.5 per cent.) represents an actual adulteration of 14.2 per cent.

Although the calculation is simple, it is nevertheless a fact that the interpretation of the data of milk analysis is woefully misunderstood. Chemists frequently err in calculating milk deficient in solids as having been watered. As a matter of fact, in the absence of the percentage of ash, chemists are not warranted in their calculation of a percentage of adulteration by the addition of water, for the result may have been brought about by the removal of cream or skimming. However, that is a matter not under consideration in this article, the explanation in which I desire to confine to purely watered milk.—American Grocer.

HOW TO HEAT A VILLAGE HOUSE.

By Harvey B. Bashore, M. D.

Although hot-air furnaces, hot water and steam are invading the country, yet the majority of village houses are stove-heated, and as a result of defective arrangement are very poorly heated, especially when the mercury falls below freezing.

In stove-heated houses the halls are always cold, and in addition, even in the rooms containing stoves, the floors are from six to eight degrees colder than the temperature four or five feet above the floor—a fact easily proved by experiment. As a consequence, one's feet are just so much colder than head and shoulders. These two defects—cold halls and cold floors—are certainly factors in producing catarrhal inflammation of throat and nose, if nothing worse. To reduce these defects to a minimum, it is necessary to alter somewhat the construction of the rooms. Every one knows the value of the open grate, not so much as a heater but as an equalizer of room temperature; and herein lies our remedy. Every room should have such a grate or its equivalent, simply an air-shaft connected with the chimney and opening into the room at the floor level. An air-shaft so arranged and of suitable dimensions answers almost as well as an open grate, and furnishes the means whereby rooms may be heated very well with ordinary stoves.

When a room which has no fireplace is heated, the heated air rises and spreads along the ceiling like a thick, heavy cloud, and if a window is opened the warm air rushes out before it has done much good; if now, on the other hand, there is an open grate, some of the hot air, escaping up the chimney, creates a partial vacuum; this, consequently, creates in the room a movement toward the opening, and the upper heated air is more diffused about the room, making the temperature more uniform.

The halls, whether they contain a stove or not, should have an air shaft, for it will assist somewhat in "sucking out" the heated air of the adjoining rooms. A small oil heater placed in the lower hall, will be of much assistance in keeping the hall temperature at the right point.

West Fairview, Pa., January 10, 1898.

A NATIONAL BUREAU OF HEALTH.

Copy of letter addressed to SILAS M. GIDDINGS, Esq., Chairman of Committee on Public Health, New York Board of Trade and Transportation, January 11, 1897.

By A. N. BELL.

DEAR SIR.—Replying to the request of your Secretary of the 24th ultimo, and inclosures, seriatim:

"First—Quarantine status and administration in foreign countries as furnishing precedents for the United States—(*a*) Border; (*b*) Internal."

(*a*) There is no quarantine status or administration in any foreign country worthy of precedent for the United States; and for manifest reasons.

The need of maritime quarantine and port sanitation obtains to a much larger degree for the United States than for any other country in the world, because, while the States severally have many inherent rights and obligations of their own, and among these rights certainly that of self-protection against dangers to human life, the Nation alone has the power to regulate commerce; and because, related to this commerce, the United States greatly exceeds any other country in the world as the collective center of all nationalities and habits of life, more or less at variance with the conditions promotive of, or in conflict with their own health or of the public health in this country. This difference from other countries was recognized at the outset of the general Government, by the provision of hospitals at our chief seaports for the sick with infectious diseases, and warehouses for infected merchandise—the beginning of the Marine Hospital Service.

In England, after the signal failure of her quarantine regulations to prevent the introduction of cholera in 1831 and 1848, the sanitary authorities, at the outset of the relentless war against local conditions, to which this second introduction of cholera gave rise, included the quarantine regulations, as they at that time obtained, among the means of propagating disease; declared them to be worse than useless, and that local sanitation—*thorough cleanliness*—was not merely the chief but the only defense to be relied upon against the introduction of infections by commerce. Nevertheless, the old quarantine regulations were retained on the statute

books, though they were ignored for more than a dozen years, until after the flagrant example of misapplied effort against the spread of yellow fever from an infected ship that arrived at Swansea in 1865. A number of cases of yellow fever occurred among the people in a *clean* town, fifteen of which were fatal. But every case was *traced to communication with the infected ship*—not a single one to personal communication with the sick. Had the ship been "quarantined," that is to say, promptly disinfected and all communication with her prohibited until that was done, there would not have been a single case of disease communicated to the visitors, and the ship would have ceased to be a source of danger to a subsequent crew.

Not long thereafter the sanitary laws were broadened in scope. Though eschewing the word "quarantine," they were made to comprehend the duties as ordinarily signified by it under modern methods of maritime and port sanitation. For example, in the Act relating to nuisances: "Any ship or vessel lying in any river, harbor or other water within the district of a sanitary authority, will be subject to the jurisdiction of that authority in the same manner as if it were a house within such district. And any ship or vessel lying within any river, harbor or other water not within the district of a sanitary authority, will be deemed to be within the district of such authority as may be prescribed by the Local Government Board; and where no authority has been prescribed, then of the sanitary authority whose district nearest adjoins the place where such ship or vessel is lying."

And besides such provisions, from time to time since 1872—when the old quarantine laws were abrogated—port sanitary officers have been created with powers and appliances comprehending all the instrumentalities essential to effective sanitation at the port of arrival. These comprise: Hospital accommodation for infectious diseases; means of transporting cases to hospital and officers from ship to ship; apparatus for disinfection; special provision against the landing of rags or other merchandise or things liable to infection from infected ports. And the medical officer of health is required to take such steps as may appear to him to be necessary for preventing the spread of infection.

(*b*) The internal measures for the prevention and spread of contagious and infectious diseases, in England, furnish a striking example of successful methods, eminently worthy of following in the United States.

Even as early as 1875, the whole of England and Wales, outside of the County of London, was divided into sanitary districts, under the jurisdiction of the sanitary authorities.

The districts are of two kinds, urban and rural. Urban sanitary districts consist of (1) municipal boroughs; (2) local government districts. Rural sanitary districts consist of such portions of poor-law unions as are not comprised in urban sanitary districts—one or more parishes; in the majority of cases several parishes.

The detail with regard to the sanitary authorities—the appointing powers and duties in connection with the supervision of the sanitary administration—is eminently suited to the powers and duties of the State Board of Health of the United States.

"Second—The present status of quarantine in the United States —(*a*) Border defense; (*b*) Interstate; (*c*) State and local."

(*a*) Border defense has been eminently successful by the Marine Hospital Service at all of its stations, when unobstructed by the complications of disputed authority by State and port authorities, as recently on the Mississippi Sound, at San Francisco, during the past year, and at some other places; and it has been alike successful at the ports of New York, Boston, Charleston and New Orleans, where the exactions of the Marine Hospital Service, under the law of 1893, are complied with. With reference to New Orleans the writer means to be understood as holding the opinion that the appearance of yellow fever during the past summer was not in consequence of any defects or laxity in the administration of quarantine.

(*b*) Every State in the Union has, and has had from the beginning, the power to impose regulations for the protection of its own people; and all—or as many of the States as may so agree—have the power to impose interstate regulations for mutual protection against the introduction and spread of contagious and infectious diseases in their midst. Indeed, not only every State, but every municipality and corporate village or town, has similar power and privileges.

(*c*) State and local restrictions against the spread of contagious and infectious diseases are, for the most part, comprised in isolation hospitals, notification cards, and, in a few States and localities, school inspections.

"Third—The existing system of quarantine administration in the United States—(*a*) Cost; (*b*) Injury to and restrictions imposed on commerce and travel."

The existing system is clearly defined under the law of February 15, 1893, comprehending all the functions, records and properties of, and repealing the Act entitled "An Act to prevent the introduction of infectious or contagious diseases into the United States, and to establish a National Board of Health," approved March 3, 1879. Divested of legal verbiage this law provides, first, that no vessel shall enter a port of the United States from a foreign port without a bill of health, signed by the United States Consul, or a medical officer of the United States Government; and provides a penalty of $5,000 to be imposed on any vessel coming into American waters without such bill of health. Furthermore, the vessel shall not be admitted to entry except in accordance with other provisions of the Act, and with such regulations of State and municipal authorities as may be made consistently therewith; and before being permitted to enter or discharge its cargo or land its passengers a certificate must be obtained from the health officer at the quarantine station, certifying that the rules and regulations have in all respects been complied with, both on his part and on the part of said vessel and its master. This bill of health and the quarantine certificate are to be delivered to the collector of customs.

The Secretary of the Treasury is directed to make rules and regulations to be observed by vessels at ports of departure and on the voyage, and the President may detail a medical officer of the Government to serve in the office of the consul at any foreign port for the purpose of making the necessary inspection of vessels, to see that the regulations are complied with, to sign the bills of health, and to furnish information.

Consular officers are required to be notified by the Secretary of the Treasury of the regulations made with regard to vessels, cargoes, passengers and crew at ports of departure and on the voyage; and of the regulations also to be observed in the inspection and treatment of vessels on arriving at ports of destination in the United States. The Supervising Surgeon-General of the Marine Hospital Service is required to examine the quarantine regulations of all State and municipal boards of health, and at ports or places which are found to have no quarantine regulations under State or municipal authority, where such regulations are, in the opinion of the Secretary of the Treasury necessary, and at ports or places where State or municipal regulations exist, which, in the opinion of the Secretary, are not efficient, the Secretary is empowered to make additional rules, which, after being promulgated, are to be enforced by the

sanitary authorities of the States and municipalities, if they will undertake to execute and enforce them, but if said authorities refuse or fail, the President shall adopt such measures as are necessary for their enforcement.

The law further specifies that it shall be the duty of the Supervising Surgeon-General of the Marine Hospital Service, under the direction of the Secretary of the Treasury, to perform all the duties in respect to quarantine and quarantine regulations which are provided for by this Act.

It further provides that information shall be obtained of the sanitary condition of foreign ports and places through the consular officers of the United States; that weekly reports shall be obtained of the sanitary conditions of ports and places within the United States, and for the collection of such other information affecting climatic conditions of the public health as may be pertinent. Weekly extracts of the consular and other sanitary reports are to be prepared and published and transmitted to the collectors of customs, State and municipal health officers, and other sanitarians. The law further permits the Secretary of the Treasury to remand an infected vessel from any port, which is not provided with proper facilities, to the nearest national or other quarantine station, and after treatment at a national quarantine station, with a certificate furnished by the United States quarantine officer, a vessel shall be admitted to entry at any port of the United States named in the certificate. But at ports where sufficient quarantine provision has been made by State or local authorities the Secretary of the Treasury may direct vessels bound to said ports to undergo quarantine at said State or local station.

An important section of this Act is that which gives the President the right to prohibit in whole or in part the introduction of persons and property from such countries or places as he shall designate, and for such period of time as he may deem necessary, whenever, by reason of existence of cholera or other infectious or contagious disease in a foreign country, there is serious danger of the introduction of the same into the United States, despite the quarantine defenses.

Provision is also made that if a State wishes to surrender the use of its quarantine buildings and disinfecting apparatus to the United States the Secretary of the Treasury is authorized to receive them and to pay a reasonable compensation to the State for their use, though no specific appropriation is made for this purpose.

The particular defects of this law are in Section 1: "And with such rules and regulations of State and municipal health authorities as may be made in pursuance of, or consistent with, this Act"; and such portions of other sections as are liable to contention by State and port health authorities.

(*a*) Cost? The committee is respectfully referred to the annual reports of the Supervising Surgeon-General of the Marine Hospital Service.

(*b*) *Nil*—if this question implies, as it should, comparison with the injury that would be inflicted by unrestricted intercourse with infected localities, pratique to infected vessels and merchandise, and freedom of travel to persons with contagious diseases—a thousandfold less than no injury at all compared with injury that would be inflicted without such restrictions.

(*c*) Reply to this question is implied in that immediately preceding. It is incomplete because of defects and deficiencies in the law, which hinder State and municipal co-operation.

"Fourth—Legislation needed for lessening injury to and restrictions on commerce and travel, and to afford greater security to the country.—(*a*) Increase power of Marine Hospital Service and how; or (*b*) Create a National Department of Health; or (*c*) Create a National Department of Commerce, with a Bureau of Health; or (*d*) Other suggestions."

Thirty-eight years ago, as chairman of the Committee on Quarantine Regulations of the National Quarantine and Sanitary Convention, in Boston, this writer had occasion to formulate among other postulates that: "All quarantine regulations of any place whatever should bear with equal force against the toleration or propagation of disease as against its introduction; and authority to prevent the introduction of disease in any place should be equally applicable against its exportation." (Proceedings of Fourth National Quarantine and Sanitary Convention, Boston, 1860, p. 181.)

It was my privilege, though not until nineteen years subsequent, to be the first to enforce this postulate, as sanitary inspector of the National Board of Health in co-operation with the State Board of Health of Louisiana, at New Orleans, in 1879. On account of the recurrence of yellow fever there during the summer of that year, every town on the Mississippi and its navigable tributaries above quarantined that city. I had been sent there under the spirit of the proposition above quoted, to keep the yellow fever from getting out. The local board of health accepted the proposition and

heartily co-operated in the effort. Inspectors were stationed at every place of departure to examine persons and things; notices were sent to all steamboat agencies to report every boat before attempting to depart, and if possible before taking any cargo on board. The result was that within four weeks every quarantine against the city had been raised. Not a single case of disease had escaped or been communicated. Because every steamboat and other vessel, and every car, had been made thoroughly clean and divested of everything liable to convey infection, with the result of greatly promoting commerce and travel.

Two months afterward, with but one single exception—a Cuban house—every shipping and steamboat mercantile agency in New Orleans signed a petition to the National Board of Health requesting the perpetuation of the service. A few years afterward the New Orleans Board of Health sent special inspectors to some of the Central American ports, where yellow fever is wont to prevail more or less every summer, to prevent its transportation to that city. A little later, the Marine Hospital Service detailed an inspector to Havanna to prevent, as far as practicable, the transportation of yellow fever from that city hither. The practice was still further extended by the Marine Hospital Service to European ports, as it was also by Dr. Jenkins, Health Officer of the Port of New York, in 1892, to prevent the departure of vessels and merchandise liable to convey cholera hither. Finally, the law of 1893, before referred to, granting additional powers and imposing additional duties upon the Marine Hospital Service, elaborates and authorizes in detail quarantine measures at ports of departure and sanitary regulations for passenger ships during the voyage.

(*a*) Increased power may and should be given to the Marine Hospital Service by divesting it of the complications and embarrassments referred to, by amending the law of 1893, as provided in the Senate bill No. 2,680, introduced by Senator Caffery in the Senate of the United States, December 9, 1897. The Marine Hospital Service is already equipped with all essential features necessary to an effective national health service. There are no more experienced physicians in dealing with infectious and contagious diseases, or better accomplished bacteriologists and analytical chemists to be found in the United States than are to be found in the medical corps of the Marine Hospital Service. Several of them are trained men in the laboratories of Koch and other men of renown in bacteriological researches and chemical analyses,

especially fitting them for such investigations as are required in the practice of preventive medicine.

Moreover, in virtue of the law of 1893, regulations have been formulated for the prevention of the spread of yellow fever and other infectious diseases from one State or locality into another; for masters and surgeons of vessels, to be observed during the voyage for the maintenance of a healthful condition, and in the event of an outbreak of an infectious disease while at sea, the keeping of records, etc. The collection of information on the prevalence of infectious and contagious diseases generally, foreign as well as domestic, has been systematized and is in practical operation; and State and local health authorities are regularly supplied with the results of such collective service by a weekly bulletin. Indeed, the Marine Hospital Service is already a Bureau of Health of the Treasury Department. The laws under which it is conducted—of which I have given an abstract above—and its organization, comprehend in detail all that is required of the several proposed bills to supplant it.

"Fifth—The power of Congress under the Constitution to regulate matters affecting the health of the people"—is not an open question. It was recognized and acted upon in the first Act of Congress imposing a tax on seamen, just one hundred years ago, as before stated—in the beginning of the Marine Hospital Service; and by numerous Acts since, elaborating that service to its present status, and the Act establishing the National Board of Health in 1879. All along exception has been taken from time to time by persons more interested in their own pecuniary welfare than in the protection of the public health, denying the right of State or municipal authorities to exact quarantine fees, or other expenses incurred on account of unclean vessels, infected merchandise, etc. In 1874, the New Orleans Board of Health was enjoined from collecting fees for quarantine inspection by Charles Morgan, of the Morgan Steamship and Railway Company. Their act was followed by other companies; and the Board of Health was greatly embarrassed in consequence of it. But in 1881, Dr. Joseph Jones, President of the Board of Health, instituted proceedings to collect the accumulated indebtedness of the Morgan Company, on account of the continued sanitary service rendered necessary by that company for the protection of the health of the people of New Orleans. The case was tried and repeated judgments of the lower courts appealed from, until it reached and was argued before the Supreme

Court of the United States, April 26 and 27, 1886, by whom it was decided, May 10 following, in favor of the Board. The contention very completely covered the question of all the rights—national, State and local—in the premises.

(*b*) That the States, by means of their boards of health, have the right and the power to co-operate in measures to prevent the spread of communicable diseases from one State into another, admits of no question. Indeed, the State Boards are already organized into a National Conference, and have been so organized since 1884, and have held annual meetings ever since. Local boards of health for the most part derive their power of organization from the civil authorities under the direction of the State boards, but some are wholly independent of the State boards.

The laws creating and defining the duties of the State and local boards of health, excepting a few States which have not, as yet, provided State boards, are abundantly sufficient. The disasters that have recently befallen the cities and towns of the States bordering on the Gulf have not been in consequence of any defects in the health laws, but the result of neglected local sanitation, with which the quarantine regulations have nothing to do.

PROPOSED AMENDMENTS TO THE QUARANTINE LAW.*

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That "An Act granting additional quarantine powers and imposing additional duties upon the Marine Hospital Service," approved February fifteenth, eighteen hundred and ninety-three, be amended by striking out the following words in Section 1: "And with such rules and regulations of State and municipal health authorities as may be made in pursuance of, or consistent with, this Act," and striking out Section 3 and inserting the following in the place of said section:

"SECTION 3. That immediately after the passage of this Act the Secretary of the Treasury shall make such rules and regulations as are necessary to prevent the introduction into the United States

*A Bill introduced by Senator Caffery in the Senate of the United States, December 9, 1897, read twice and referred to the Committee on Public Health and National Quarantine, and known as Senate Bill No. 2680.

of any infectious or contagious disease from any foreign port or place, or the spread of such diseases from one domestic port to another, and such necessary rules and regulations as shall be observed by vessels or vehicles departing from foreign ports, or places, for ports or places in the United States, to secure the best sanitary condition of such vessels or vehicles, their cargoes, passengers and crews, which rules and regulations shall be published, and communicated to, and enforced by, consular, quarantine and customs officers of the United States, and the State and local quarantine officers of the United States. All rules and regulations made by the Secretary of the Treasury shall operate uniformly, so far as climatic conditions will justify, in the interest of security against the introduction or spread of said infectious and contagious diseases, and shall not discriminate against any port or place. None of the penalties herein imposed shall attach to any vessel from a foreign port, or owner or officer thereof, until a copy of this Act, with the rules and regulations made in pursuance thereof, has been posted up in the office of the consul, or other consular officer of the United States, for ten days, in the port from which said vessel sailed, and the certificate of such consul or consular officer, over his official signature, shall be competent evidence of such posting in any court of the United States. Nor shall the penalties imposed by this Act attach to any common carrier, or officer, agent or employé of any common carrier, crossing the border of the United States, until a copy of this Act, with the rules and regulations made in pursuance thereof, has been published and made publicly known.

"At any port or place in the United States where the Secretary of the Treasury shall deem it necessary for the prevention of the introduction of contagious or infectious disease from a foreign port or place, that incoming vessels, vehicles, or persons shall be inspected by a national quarantine officer, such officer shall be designated or appointed by the Secretary of the Treasury, on recommendation of the Surgeon-General of the Marine Hospital Service, and at any such port or place no vessel, vehicle or person from a foreign port or place shall be admitted to entry or enter without the certificate of said officer that the United States quarantine regulations have been complied with.

"Any vessel sailing from any foreign port without a United States consular bill of health, and arriving within the limits of any

collection district of the United States, and not entering or attempting to enter any port of the United States, shall be subject to such quarantine measures as shall be prescribed by regulations of the Secretary of the Treasury, and the cost of such measures shall be a lien on said vessel, to be recovered by proceedings in the proper district court of the United States, and in the manner set forth above as regards vessels from foreign ports without bills of health and entering any port of the United States.

"National quarantine stations now in operation shall be conducted in accordance with the provisions of this Act, and the Supervising Surgeon-General, with the approval of the Secretary of the Treasury, is authorized to designate and mark the boundaries of the quarantine grounds and quarantine anchorages for vessels, which are reserved for use at each United States quarantine station; and any vessel, or officer of any vessel, or other person, trespassing upon such grounds or anchorages, in disregard of the quarantine rules and regulations, shall be deemed guilty of a misdemeanor and subject to arrest, and, upon conviction thereof, be punished by a fine of not more than three hundred dollars, or imprisonment for not more than one year, or both, in the discretion of the court.

"And any master or owner of any vessel, or any person, violating any rule or regulation made in accordance with this Act, relating to inspection of vessels, or relating to the prevention of the introduction of contagious or infectious disease; and any master, owner or agent of any vessel making a false statement relative to the sanitary condition of said vessel or its contents, or as to the health of any passenger or person thereon, shall be deemed guilty of a misdemeanor and subject to arrest, and, upon conviction thereof, be punished by a fine of not more than five hundred dollars, or imprisonment for not more than one year, or both, in the discretion of the court.

"Medical officers of the United States, duly clothed with authority to act as quarantine officers at any port or place within the United States, and when performing such duties, are hereby authorized to take declarations and administer oaths in matters pertaining to the administration of the quarantine laws and regulations of the United States.

"The Secretary of the Treasury shall, whenever in his judgment it is necessary, make rules and regulations to prevent the introduction of infectious or contagious diseases into one State or Terri-

tory, or the District of Columbia, from another State or Territory, or the District of Columbia, and when such rules and regulations have been made they shall be promulgated by the Secretary of the Treasury and enforced by the sanitary authorities of the States and municipalities, when the State or municipal authorities will undertake to execute or enforce them; but if the State or municipal authorities shall fail or refuse to enforce said rules and regulations, or other rules and regulations made under the provisions of this Act, the President shall execute and enforce the same, and adopt such measures as in his judgment shall be necessary to prevent the introduction or spread of such diseases, and may detail or appoint officers for that purpose.

"Whenever yellow fever, cholera, plague, or typhus fever has passed the quarantines of the United States, or in any manner any one of these diseases has gained entrance, or has appeared, within the limits of any State, Territory, or the District of Columbia, the quarantine regulations of the United States, prepared under the direction of the Secretary of the Treasury, shall be supreme and have precedence of State or municipal quarantine laws, rules or regulations, and the President is authorized to enforce the same within the limits of any State, Territory, or the District of Columbia, and to control the movements of vessels, railway trains, vehicles or persons within any State, Territory, or the District of Columbia, to prevent these diseases from spreading from one State, Territory, or the District of Columbia, to another State, Territory, or the District of Columbia, and to prevent unnecessary restrictions upon interstate commerce; and whenever, in accordance with the rules and regulations made as herein authorized to prohibit or permit the movement of vessels, railway trains and vehicles, or transportation of persons, prohibitions or permits have been made or granted, any person violating said prohibition or permit shall be deemed guilty of a misdemeanor, and shall be subject to a fine of not more than one thousand dollars, or imprisonment for not more than twelve months, or both, at the discretion of the court; and any violation of said prohibition or permit shall be reported to the United States District-Attorney for the district in which the offense has been committed, who shall thereupon institute necessary proceedings for the recovery of the penalty herein imposed."

That Section 6 of said Act shall be amended to read as follows:

"That on the arrival of an infected vessel at any port not provided with proper facilities for treatment of the same, the Secretary

of the Treasury may remand said vessel, at its own expense, to the nearest national or other quarantine station where accommodations and appliances are provided for the necessary disinfection and treatment of the vessels, passengers and cargo; and after treatment of any infected vessel, or inspection of any vessel not infected at a national quarantine station, and after certificate shall have been given by the United States quarantine officer at said station that the vessel, cargo and passengers are each and all free from infectious disease, or danger of conveying the same, said vessel shall be permitted to enter and admitted to entry at any port of the United States named within the certificate. But at any ports where sufficient quarantine provision has been made by State or local authorities, the Secretary of the Treasury may direct vessels bound for said ports to undergo quarantine at said State or local station."

That Section 8 of said Act shall be amended to read as follows:

"That whenever the proper authorities of a State shall surrender to the United States the use of the buildings, grounds and disinfecting apparatus at a State or municipal quarantine station, the Secretary of the Treasury shall be authorized to purchase them at a reasonable compensation, or pay a reasonable rental for their use, if in his opinion they are necessary to the United States; and the expense of the said purchase or rental is made payable from the epidemic fund."

HISTORY OF THE RECENT EPIDEMIC OF YELLOW FEVER ON THE GULF COAST.

THE LOUISIANA STATE BOARD OF HEALTH IN ITS OWN DEFENSE.

NEW ORLEANS, December 6, 1897.

To His Excellency Murphy J. Foster, Governor of Louisiana.

SIR.—We have the honor herewith to resign our commissions as members of the Board of Health of the State of Louisiana.

In so doing we wish it to be understood that we are not moved by the clamor of a frenzied public, but by a respectful wish to spare your Excellency the possible embarrassment of being importuned by certain commercial Exchanges to ask for the resignations of sworn officers holding your commissions, because the members of those Exchanges, smarting under recent business losses, and stimulated by hostile newspaper criticism of this Board, have assumed the prerogative of voicing public sentiment.

Our official conduct throughout will bear the closest investigation, and we feel that we can rely on truthful history for that vindication before the people which, in the present disturbed condition of the public mind, it would be vain to attempt.

It is necessary, however, for the immediate official vindication of the retiring members that certain facts, bearing directly on the action of the Board, should be set forth here.

The accompanying statement gives these facts in detail, and in justice to us we trust that you will patiently read the same. By examining the dates referred to it will be seen that the utmost vigilance and promptness marked every step taken by this Board.

Finally, with the consciousness of having labored faithfully as a Board all these years, to discharge the responsibilities we had assumed to our city and State, and to the entire Mississippi Valley, we now retire from that service with the hope that our immediate successors may be more fortunate.

Respectfully, your obedient servants,

S. R. OLLIPHANT, M.D.,
GEORGE K. PRATT, M.D.,
EDW. S. MAUNSELL,
M. V. RICHARD, M.D.,
T. W. DYER.

FELIX FORMENTO, M.D., resigned subsequently.

STATEMENT ANNEXED AND MADE PART OF THE RESIGNATIONS OF MEMBERS OF THE BOARD OF HEALTH.

Reviewing the fever from the first suspicion, we give below the published statement of the President, which covers the history of the Board's action up to the 6th of September:

"The first intimation of yellow fever in this country to reach this office came through a telegram of inquiry, dated August 16, referring the President of the Louisiana Board of Health to a letter from a doctor at that time unknown to me, which letter had not been received. I replied at once, asserting there was no yellow fever in New Orleans, and asking who the doctor was. He answered on August 17 that he was one of their prominent physicians, and again referred me to his letter. On August 18, in the afternoon, I received the letter spoken of, which informed me of a patient under treatment, represented at that time as having left New Orleans on the 12th, and who had received medical treatment en

route. He had been previously under the treatment of a physician of New Orleans, whose name is given in the letter (Dr. E. S. Lewis).

"The case was pronounced one of undoubted yellow fever by the doctor in Louisville. The letter states that, owing to the incoherency of the patient, no definite history of the case could be obtained, and further stated in a postscript that the patient had been in Ocean Springs one week before coming to Louisville.

"Immediately on receipt of this letter, on August 18, the office where the patient was employed was interviewed, and the information that he had been in Ocean Springs was verified. The New Orleans physician referred to as having previously attended him was sought, but found to be out of the city. It transpired later, however, that he had been under the treatment of another physician in this city for malarial toxaemia (Dr. John B. Hart). I have the written report of the latter physician attesting this fact. These facts were embodied in a letter to the physician in Louisville, dated August 19. In the meantime I received a telegram announcing the death of the patient in question, and at once wired a request that an autopsy be held. I received, on the 20th, a letter dated on the 18th, stating that, owing to the confusion attending the death, the body had been injected with embalming fluid before an autopsy could be obtained. The same letter inclosed clinical records of the case. In addition to the investigations made in the city of New Orleans, inquiry was made through a physician connected with this office (Dr. W. H. Woods, chief sanitary inspector), who had just returned home from a two weeks' vacation at Biloxi, as to the prevalence of any suspicious disease in that country. He assured me that he had met the physicians of both Ocean Springs and Biloxi frequently, and if there had been any fever of a suspicious nature he would most probably have heard of it.

"On the 21st I received another letter, in the afternoon of that day, from Dr. Holloway in Louisville. It was dated on the 19th. This letter conveyed information elicited from the wife of the deceased to the effect that the disease was contracted in a house at Ocean Springs occupied, or visited, by Cuban refugees. On this information I determined at once to make a personal investigation, and proceeded on the early morning train of the next day, August 22, Sunday, to Ocean Springs, accompanied by a member of the Board. Through the courtesy of the local profession and a prominent New Orleans physician, Dr. J. H. Bemiss, who was summering there, I was enabled to visit a number of cases of fever. In

addition to the cases I saw I learned that there had been in the practice of two physicians within the past six weeks as many as 400 cases of fever without a single resultant death. This disease was considered as dengue, and that of a mild type, up to within a day of my visit. Some of the cases I saw were sufficiently ill to attract more than a passing notice. In view of the proximity of Ocean Springs to New Orleans, and the constant daily travel between the two places, I must confess to having felt great surprise at the existence of a fever so extensively prevalent, and yet not even rumored in New Orleans.

"Returning to New Orleans on the evening train, I at once took steps to get members of the Board of Experts to accompany me the next day to Ocean Springs, with a view of making a thorough clinical investigation. By 11 o'clock the next day, in company with three prominent physicians—Drs. O. Czarnowski, L. P. Salomon and G. F. Patton, experienced in yellow fever—I left New Orleans on the fast mail, specially delayed for our accommodation. I telegraphed Dr. Haralson, resident of Biloxi, and member of the State Board of Health of Mississippi, and asked him to join us, which he did. Arriving in Ocean Springs, we proceeded at once to investigate, and after seeing all the cases I had visited the day previous and some others, these gentlemen submitted to me the following report:

"'OCEAN SPRINGS, Miss, August 23, 1897.

"'*Dr. S. R. Olliphant, President of the Board of Health of Louisiana.*

"'DEAR SIR.—The undersigned, having been requested to investigate an epidemic of fever prevailing at this place, would report as follows:

"'In company with Drs. J. H. Bemiss and O. L. Bailey, attending physicians, we visited and carefully examined eleven cases of the prevailing disease, of which we have been informed there have been during the past six or seven weeks over 400 cases, none fatal except two or three complicated with pre-existing organic trouble. After a careful inspection and examination of the aforesaid cases, which correspond in clinical history with other existing cases, and cases which have previously occurred, we are positive in our opinion that the disease is dengue, and that no case, either in those seen by us or in cases whose history has been obtained from the

attending physician, is there or has there been any symptoms which would lead to even a suspicion of more serious disease.

" '(Signed by the entire medical commission present.)

" 'LUCIEN F. SALOMON, M.D.,
" 'O. CZARNOWSKI, M.D.,
" 'Of the Board of Experts.;
" 'G. F. PATTON, M.D.,
" 'Secretary Board of Health.;
" 'H. H. HARALSON, M.D.,
" 'Member Mississippi State Board of Health.'

" 'We, the undersigned, concur in the above diagnosis of the disease now prevailing at Ocean Springs.

" 'O. L. BAILEY, M.D.,
" 'J. H. BEMISS, M.D.'

"I telegraphed to convene the Board in special session awaiting our return. Arriving in New Orleans, the report was submitted to the Board. There was a great feeling of relief. The report was published in all the papers, and for a time being all occasion for apprehension appeared to have been allayed.

"Further rumor relative to Ocean Springs reaching this office, I telegraphed on the 27th requesting the representative of the Mississippi State Board of Health to again investigate Ocean Springs, especially in regard to one patient whose name was connected with this rumor. He at once made the investigation and sent me the following dispatch in reply:

" 'OCEAN SPRINGS, Miss., August 27, 1897.

" '*Dr. S. R. Olliphant, President Louisiana State Board of Health.*

" 'In reply to your request we have again investigated the fever at Ocean Springs, which is abating and absolutely without fatality. The conclusion arrived at was that it is not yellow fever. The case of Miss ——— is free from suspicion. By invitation Dr. Sanders, health officer of Alabama, joined us in the investigation and shares the opinion with us.

" 'H. H. HARALSON, M.D.,
" 'Member Mississippi State Board of Health;
" 'O. L. BAILEY, M.D.,
" 'Attending Physician;
" 'W. H. SANDERS, M.D.,
" 'Health Officer of Alabama;
" 'J. H. BEMISS, M.D.'

"This is the first evidence I had of an investigation being prosecuted by the Alabama authorities.

"On September 1, 2 o'clock in the morning, I was rung up by telephone by a prominent physician of this city, Dr. E. T. Shepard, who stated that he had a suspicious case of fever on Soniat street, and invited me to investigate the same with members of the Board of Experts to meet at his house at 9 o'clock of the same morning. As this case had come from Ocean Springs, I purposely got together the same medical gentlemen who had visited Ocean Springs with me. We met promptly at 9 o'clock at the doctor's house and proceeded to the patient's residence. After thorough examination and discussion of the case the conclusion was reached that it was not yellow fever. On September 2, in the afternoon, the attending physician, Dr. E. T. Shepard, called at the Board of Health office, stating that he was not satisfied with the condition of the patient, and that he invited further investigation on the part of the Board of Experts. At the same time he said he would have with him some medical friends of his own selection. The same gentlemen of the Board of Experts, with one other member, Dr. J. C. Bickham, of the Board of Experts, added, met the attending physician, Dr. E. T. Shepard, that evening, who had with him two prominent practitioners of this city, Drs. F. W. Parham and F. Loeber, whom he had requested to participate in the consultation. There was a special meeting of the Board of Health that evening, convened to await the result of this conference, with a view of taking such action as might be considered necessary. I was authorized to state on my arrival at the Board's meeting that this was not yellow fever. However, a part of this investigating commission would see the case again the next day and give me a positive decision as to even suspicion. This further investigation would take into consideration the bacteriological examination of the blood which would be made pending the time of their meeting the next morning. At 11 o'clock that night the acting bacteriologist, Dr. J. J. Archinard, went from the office of the Board of Health and obtained from the patient a sample of his blood, and completed his examination and submitted his report for the consultation of the next morning. After this consultation one of the gentlemen, Dr. L. F. Salomon, reported to me that he was authorized to state on behalf of his colleagues that the case was absolutely not suspicious of yellow fever, and the report of the bacteriologist sustained the decision by reason of finding the characteristic organisms of malaria present

in large quantities in the blood. In the face of this evidence the Board of Health could not at that time consider this a case of yellow fever, and the house was never quarantined.

"At a special meeting of the Board, held Friday, September 3, to receive the report of the medical commission having in hand the matter of the Soniat street case, it was determined that another investigation should be made at Ocean Springs, with a view of ascertaining the character of the prevailing disease and determining, if it was not yellow fever, what kind of fever it was, and what was the cause of it. For this thorough investigation I took with me a physician experienced in yellow fever, Dr. S. G. Gill; the acting bacteriologist, Dr. J. J. Archinard; the chemist of the Board, Dr. A. L. Metz; the chief sanitary inspector, Dr. W. H. Woods, and his assistant, Mr. T. C. Will, with a full equipment of instruments and material. We left Saturday, September 4, arriving at Ocean Springs in the evening. We found Dr. Sanders, the Health Officer of Alabama, and a representative of the United States Marine Hospital, Dr. Wasdin, already on the field, they having arrived by an earlier train that day from Mobile. They having had an opportunity of an autopsy during the day, were convinced that it was yellow fever, but, in deference to us, they agreed to withhold their report or decision until another autopsy, which would evidently present itself within a few hours, should have offered us a similar opportunity of satisfying ourselves. The patient died Sunday night, and early Monday morning the expected autopsy was performed by the bacteriologist of this Board, in the presence of the medical gentlemen assembled. Unmistakable evidences of yellow fever having been revealed, we arrived at a unanimous verdict, and about 10 o'clock of the same morning I telegraphed this information to the Board of Health, and requested the Board to be in session at 3 o'clock, the hour of my return. While at Ocean Springs, I received a telegram from a physician of this city, Dr. S. L. Theard, announcing the death of a patient from yellow fever on Rampart street. These occurrences took place Monday, September 6.

"The character of the Rampart street case was confirmed by an autopsy, and without waiting for the return of the President the Board was convened at 11 o'clock a. m., in special session. Acting on advice received from the President at Ocean Springs, a resolution was adopted declaring quarantine against all points on the Louisville and Nashville road west of Mobile, the same to go into

effect immediately, with the proviso that the President be authorized to relieve such places as might be subsequently found to be free from infection. A copy of this resolution was sent by a special messenger to Mr. Charles Marshall, superintendent of the Louisville and Nashville road, and reached him about 1 o'clock, Monday, September 6. Simultaneously notices were sent to the express company and the baggage department, forbidding the bringing of express matter or baggage to this city. At 5.30, the President having arrived, the Board was again convened in a special session to receive his report and to consider what further measures should be adopted. The superintendent of the Louisville and Nashville Railroad came before the Board and stated that the incoming trains had not stopped at Ocean Springs, and had been boarded at Biloxi and points this side by crowds of people, principally women and children, without any baggage whatever, and in defiance to opposition. These people were then on their way to New Orleans. In the discussion which ensued, it was argued that these people were New Orleans people, coming from points at that time not known to be infected, and that they might safely be admitted. The President, who had arrived on a special train, reported that Biloxi had already instituted quarantine against Ocean Springs, and that from conversation that day with representatives of the State Board of Health of Mississippi, resident in Biloxi, who had returned to Biloxi on the special train, he was informed that there was no suspicious case in Biloxi. The Board, taking into consideration that there was nobody on these trains from a known infected point, felt justified in allowing these two trainloads of people to return.

"As this has been a matter of such widespread comment, I have taken the trouble to re-investigate the whole matter, and have been assured that absolutely no one from Ocean Springs came in on either of these two trains.

"In answer to criticisms of the action of the Board based upon the statement, the following additional explanations were submitted:

"1. No trainload of people was ever admitted to New Orleans from Ocean Springs after the diagnosis of the disease.

"2. At the time of the autopsy made by Drs. Sanders, Wasdin, Haralson and Bailey, in the Tillman case, there was a division of opinion between them as to the nature of the disease. Two were of the opinion that it was yellow fever, and two were of the con-

trary opinion. Neither our experts nor any one of our Board had seen the case, or had been present at the autopsy, we being on the way to Ocean Springs at the time. Prior to and at the time we were investigating, we learned positively that cases had been taken from Ocean Springs to New Orleans and to Mobile, so that we were practically diagnosing the fever for New Orleans and Mobile. It will, therefore, be understood that we could not pronounce the disease yellow fever from an autopsy we never held, but which was held by gentlemen who disagreed among themselves, two holding one opinion and two another, and in the face of an opinion of some of our most distinguished physicians, who were recognized experts, that the prevailing disease was dengue. I submit that to have accepted the diagnosis of a divided opinion in the Tillman case, and to have announced to the world that yellow fever was in Ocean Springs, and by implication in New Orleans and Mobile, which would have been the inevitable result, based upon the opinion of these two physicians, would have precipitated a calamity which it was earnestly hoped we would be able to avert.

"In conclusion, I submit that to have blindly accepted the diagnosis of yellow fever, based upon the decision of two gentlemen present at the autopsy, disregarding the opinion of the other two, and absolutely discrediting the opinion of our experts, would have been in the highest degree irrational and culpable.

"If the disease had been subsequently proven not to be yellow fever, the infliction of a needless panic, caused by such action, would have entailed upon all parties concerned the just condemnation of the entire country."

(I have since learned that Dr. Bailey was not present at the autopsy.)

At the sessions of the Board of Health, which were held daily, advice and conference were offered by prominent and public-spirited citizens, by representatives of the Exchanges, by the Mayor and City Council, and, later, by a committee from the Orleans Parish Medical Society.

A Board of Experts, composed of ten physicians of prominence and experience, and recognized by the profession and public as men of ability, was requested to advise and co-operate with us from the beginning. It will be seen there was no lack of consultation.

The press also shared in our consultations, and for the time all seemed harmonious and absorbed in the great and united effort of averting a threatened calamity, such as befel us in 1878.

That these united efforts were not without result, we call attention to the fact, by comparison, that in 1878 there were 25,000 cases and over 4,000 deaths, whereas in 1897 the grand total of cases reported did not reach 2,000 nor the deaths 300.

While it may appear that the disease made its advent in the first days of September, it is in evidence that there were cases here early in August, and, it is claimed, as early as the latter part of June.

The recorded history of the disease shows that it does not burst forth all of a sudden, but it gathers volume and force after smoldering for a time. The events connected with the development of the disease at Edwards, Miss., present a remarkable verification of this fact. There the fever was introduced by a family from Ocean Springs as early as the 8th of August, and it was not until the middle of September that the disease attained any considerable headway. Such has been the invariable clinical history of the disease in the city of New Orleans in past epidemics.

The Board of Health has been criticised and severely censured for general inactivity and incompetency, for letting the fever into New Orleans, for reporting the cases that occurred, for not stamping out at once the disease and preventing its spread, and, lastly, for telling the truth.

The last charge is the only one to which we plead guilty.

To take up the other charges seriatim:

The first has been fully covered by the statement of the President above quoted.

As regards the second charge, the Board cannot reasonably be blamed for not preventing the entrance of the fever, which had already found its way unrecognized into the city, and was of such a mild type as not to attract the attention of the physicians of New Orleans. No cases came under the observation of the officials of the Board of Health, and no breath of suspicion was whispered concerning it by any of the profession. The Board of Health necessarily depends for its information as to the existence of infectious disease upon the reports of practicing physicians.

As to the third charge, that of reporting cases, it is only necessary to reflect for a moment, and it will be realized that the practicing physicians of the city diagnosed and reported as in duty bound the cases to the Board of Health in conformity with existing laws. Only in doubtful cases, so reported by attending physicians, were experts of the Board sent to pass upon the true nature of the disease. It is but fair to state that these experts, selected from the

foremost ranks of the medical profession, were in no manner in the employ of the Board, but rendered their services gratis. Later, two experts, Drs. Woolf and Mioton, were employed, as the calls for this service became so numerous. The Board of Health only received the reports of and recorded the cases pronounced yellow fever by the medical practitioners of New Orleans. The medical officers of the Board were absolutely prevented from practicing by reason of their onerous duties, and therefore did not undertake to treat cases of yellow fever. Our office simply received reports, and we had neither authority nor inclination to suppress or falsify our records.

The press and public are privileged by law to examine Board of Health records. When the cases became alarmingly numerous it was suggested that a double set of books might be kept. Such suggestions were repelled with the scorn they merited. Money may be the god and ledgers the prayer-books of some people, but if this State should ever have a Board of Health so weak as to be influenced by such sordid interests, we may expect quarantine against this city every summer.

Our Board of Experts is composed of the following-named gentlemen, all of whom are honest, honorable and competent physicians: Drs. O. Czarnowski, John B. Elliott, A. Pettit, L. F. Salomon, T. S. Kennedy, C. J. Bickham, Isadore Dyer, Y. R. LeMonnier, J. Tountre and G. Devron. Later, through the courtesy and tender of the Orleans Parish Medical Society, their committee, composed of Drs. R. Matas, John Callan, F. W. Parham, A. Pettit and E. M. Dupaquier, were added to the list, making a Board composed of fourteen prominent practitioners of medicine in this city.

In the numerous conferences that took place it goes without saying that every individual idea could not be carried out. These gentlemen must admit, however, that respectful consideration was given to all suggestions. The Board, feeling its own responsibility as an official body, after full discussion on all points on which there was any difference of opinion, acted consistently, conscientiously, and in line with what it deemed for the best interests of the city.

There was a difference of medical opinion as to the propriety of maintaining house quarantine as long as we did, but there were no differences about inaugurating this practice.

There was likewise a difference of opinion in the mind of the public and press on this same subject; the two morning papers

wrote editorials, strongly urging keeping up the fight on the lines originally mapped out. Some of the evening papers were opposed to this course. Prominent business men and merchants, and the railroad men, without exception, demanded no relaxation, while others declared it was a hardship and a useless expenditure of money. There was a time when the Board seriously contemplated removing quarantine, by reason of lack of funds. At this juncture public-spirited citizens got together and appealed to the Governor and Legislature for aid, and, as a result, $50,000 was placed at the disposal of the Board. Could we, with any show of reason, under the circumstances, have given up the fight? To have done so would have been cowardly and a just cause of reproach. We would have declared to the world that the fever was epidemic and beyond control, and would have entailed a calamity on this city far more extensive than our present misfortune will prove. That our efforts in restricting the disease were not more successful is due in a great measure to lack of co-operation on the part of many of the physicians who were opposed to our sanitary methods and failed to report their cases. Some physicians who honorably reported their cases stated that others were concealing cases for fear of offending their clients and losing their practice. These wilfully violated the law. This course on the part of some physicians tended, to a great extent, to foment opposition to the measures of the Board. One family would naturally rebel against restrictions, when a neighbor, having the same disease, was not subjected to the same treatment. People could not be made to understand that this was not the fault of the Board of Health. It might be asked, Why did we not prosecute all derelict doctors for violating the law? It can be readily understood that any doctor can entrench himself behind his diagnosis, and it would be impossible to convict him. All health records are necessarily at the mercy of the medical profession and dependent on the skill, integrity and law-abiding spirit of practicing physicians. An opportunity to verify the diagnosis is only afforded when the physician reports the case as suspicious.

Yellow fever was in Ocean Springs weeks before any suggestion or suspicion of its existence reached New Orleans. The cases were mild and not recognized by attending physicians. The same is true of earlier cases which existed in New Orleans in July and August. These cases, if not recognized and not reported to the Board of Health office, could not have been divined by intuition by the President or members of that Board, and hence the Board

could not be blamed for the lack of early recognition. Censure for failing to recognize such cases is on a parity with other criticisms worked up and dished out to a clamoring and prejudiced public.

The same lawless spirit against constituted authority, which more than once has brought discredit on this community, seems to have pervaded the deliberations of the Exchanges, which conspired to depose this Board. If succeeding Boards hope to please these unreasoning, imperious masters, let them bury their sensibilities before assuming the guardianship of the public health of the State of Louisiana.

The flagging of premises where infectious disease exists is done in obedience to law; as officials we have tried to carry out the law. The quarantining of premises is nothing new. It was practiced quite extensively in 1895, when we had smallpox in our city; but, as this disease was principally among negroes and people in the lower walks of life, there was never any howl about the severities of the practice. Yellow fever, being no respector of person, and no prophylactic being known, has invaded houses of some of our club men and members of the Exchanges, and when their liberties are restricted for the benefit of the town or State they denounce the practice as a heinous crime. Where is that boasted self-denial and devotion to duty of the New Orleans public? Does it exist in the laboring man only?

The practice of house quarantine was determined upon after consultation with the Board of Experts, the committee of the Orleans Parish Medical Society, the city officials and voluntary committees of prominent citizens. It met with their entire approval. Has any one of these gentlemen come forward and offered to share the odium engendered by this practice? Has the press given voice to any conciliatory articles, and claimed its share in the responsibility for these measures? Have the Mayor and City Council intimated that these actions met their approval? And how about our friends among the Exchanges, who labored with us night and day for the sake of contriving some means of shipping a few goods to the country? Their commerce was paralyzed and they demand a sacrifice.

We shall most willingly relinquish our thankless task, but in parting with our commercial friends, would remind them that charges are more easily made than proven, and that they have been charged with attempts at deception, shipping under false labels, in violation of schedule agreed upon with quarantine author-

ities, and with sending circulars to the country denying the existence of yellow fever in New Orleans, when it was known throughout the Union.

With such charges against them, will their recent acts, demanding the resignation of the Board of Health, a Board that enjoys the confidence of all neighboring authorities, for truth and sincerity at least, be calculated to restore public confidence and lessen the probability of this city being quarantined periodically for years to come?

END OF THE EPIDEMIC—DISINFECTION.

The surgeon in charge of the Charity Hospital, who also had the care of the temporary Beauregard Hospital for the care of yellow fever patients, reported to the Mayor of the city, December 11, 1897, "that the building has effectually served the purpose of an isolation hospital, in not only reducing the mortality rate of hospital cases as compared to similar occurrences of previous years from 50 to 20 per cent., and by protecting the otherwise sick of the institution from the danger of infection, but in demonstrating to the people the care, precaution and protection that the hospital exercises in its efforts toward caring for the sick poor. No case has occurred within twelve squares of the institution, and no case has been traceable to any contact from the premises.

"The 216 cases that were treated represented the worst type of the prevailing disease, and were admitted, for the most part, in an advanced stage.

"The entire building has been thoroughly scrubbed with soap and warm water, and washed with a solution of bichloride of mercury; in addition, the interior has been fumigated from foundation to roof, washed with a bichloridized whitewash, painted and glazed, and all flues burned out. The outbuildings have been similarly treated, and all buildings in which there has been any contact with patients, or their clothing, have been burned. The closets have been excavated, and the walls washed with carbolized lime and saturated with the mercury solution.

"In conclusion, I beg to say that in my judgment the building is absolutely safe for immediate occupancy for school purposes.

"Very respectfully,

"J. D. Bloom, M.D., Surgeon in Charge."

December 17.—Dr. Will H. Woods, in charge of the Sanitary Department of the city, and his assistant Mr. T. C. Will, with a

large force are energetically pushing the work of disinfecting and cleaning premises where cases of fever have occurred, and the whole city is in process of cleansing. Dr. Woods called for a large sanitary force because, he said, "there are nearly 80,000 houses in New Orleans. I cannot urge too strongly upon our citizens the importance of availing themselves of our offer to disinfect all premises where fever of any kind has existed since the beginning of summer. In all houses where fever has existed, I cannot advocate too strongly the throwing open of the entire house on the first cold day, and as often as possible on cold days thereafter, at the same time hanging out the bedding, opening and taking out the contents of closets, wardrobes, dressers, etc., so that the cold air may better penetrate the texture through and through."

Mr. Will stated that the district work was being vigorously pushed, and that the filthy places discovered in certain sections of the city during the raid made by the citizens' sanitary committee were being kept in good condition.

"An effort is to be made," he said, "to make regular inspection of each ward in the city. This ought to be done, and in case we have sufficient force it will be done."

THE COMMERCIAL ASPECT.

President Stuyvesant Fish, of the Illinois Central Railroad, thinks that the epidemic was "only a little one," if not, indeed, a miscarriage and of no consequence at all. Writing to the editor of the New York Commercial Chronicle, January 4, with reference to the date on which the fever became epidemic in New Orleans, he says that it did not become epidemic in this city at all; that in a population of (say) 270,000 people there were only 1,908 cases of fever and 298 deaths, that during the months of September, October, November and December, 1897, there were only 2,256 deaths as compared with 2,170 deaths in the same months of 1896, and that for the whole year 1897 the mortality in New Orleans amounted to only 6,728, as compared with the mortality of the whole year 1896, which amounted to 7,594—a decrease of 866. It would be a wonderful epidemic, surely, that would not only not swell the mortality roll but would lessen it over the whole year by 866 deaths—a decrease in comparison with the preceding year of 11.4 per cent.

"Epidemics of disease that are worth calling by the name of 'epidemics,' do not, as a rule, diminish the death-rate of the place that is attacked."—Nevertheless, it *is* a rule that sanitation in con-

tending with epidemics does lessen the death-rate from other diseases, as in this case. But epidemics are not on that account to be regarded as of but little account, or even beneficial, as Mr. Fish seems to intimate. On the contrary, they show the life-saving result of practical sanitation even under the most unfavorable circumstances, and admonish the people of the constant loss of life by neglected sanitation, besides being at all times a fruitful source of epidemics.

Mr. Fish proceeds to show that the prevalence of yellow fever in New Orleans for three months, under such circumstances, "had scarcely a perceptibly detrimental effect upon the commerce of the city. The exports of cotton for the four months of September, October, November and December, 1897, were 1,024,744 bales, as compared with 1,029,484 bales during the same four months of 1896—a decrease of only 4,740 bales in the time. And a decrease of 4,740 bales from a total of 1,029,484 bales is equivalent to a decrease of nearly one-half of 1 per cent This is just the extent to which the cotton export of New Orleans has suffered through the yellow fever; and a decrease of one-half of 1 per cent is not a decrease to cause alarm! But, as a matter of fact, there has been no decrease." In short, President Fish shows to his own satisfaction, and, doubtless, to the satisfaction of the municipal authorities of New Orleans, that inasmuch as the visitation of yellow fever did not have any perceptibly damaging effect either on the mortality or on the commerce of New Orleans, the 298 persons killed by it, and the 2,000 or more persons who had it, were of no consequence to the present or future well-being of the city. How much is a human life worth in New Orleans anyhow?

SHIP ISLAND QUARANTINE AND ITS RIVALS.

STATEMENT FROM SURGEON-GENERAL WYMAN IN REPLY TO RECENT CHARGES.

From Washington Post.

Editor Post.—I have to acknowledge the receipt of your communication inclosing press articles concerning Ship Island quarantine, with request for information upon the subject.

So many false statements concerning this station have been made, with the evident intent of reflecting upon the Marine Hospital Service, that I avail myself of the opportunity thus offered to present the following facts:

The charges that have been persistently made and reiterated in the press are: First, that Ship Island, Miss., is dangerously near the coast, being only five miles therefrom, with free communication between the quarantine and the settlements on the coast; second, that the station was moved from there by Act of Congress to Chandeleur Island, and after the destruction of that island by the storm of 1893 I illegally re-established the station on Ship Island; and, third, that by reason of its proximity and through carelessness and faulty administration yellow fever was introduced into Mississippi last fall through this station.

An examination of the coast charts will show that Ship Island is twelve miles from the nearest point on the shore. It is an uninhabited island, nine miles long, with the quarantine station near the eastern end and the shipping harbor at the western end. With the exception that on a clear day the shore lines and the vessels in the shipping harbor may be seen, the station is as much isolated as if it were in the Desert of Sahara. A quarantine station is as necessary for the convenience of commerce as it is for the safety of the people. There is absolutely no place for the location of a quarantine off the coast of Mississippi to which greater objections cannot be made than are made to Ship Island. If a distance of twelve miles from the coast is an insuperable objection, then the quarantine stations at San Francisco and San Diego, Cal.; Galveston and Sabine Pass, Tex.; Mobile, Ala.; Key West and Fernandina, Fla.; Brunswick and South Atlantic quarantine, Ga.; Cape Fear quarantine, N. C., and New York quarantine all would have to be moved, for they are all nearer to the coast or to populated districts than is Ship Island. This Island was originally selected as a quarantine site by the National Board of Health in 1879. The first steps looking to the removal of the quarantine were taken immediately after the National Board of Health went out of existence in 1883. Captain Lay, of the revenue cutter service, and Surgeon Murray, of the Marine Hospital Service, were directed to visit the other islands in the Gulf, and reported, under date of December 19, 1883, that Ship Island was the best located and the only island that possessed the necessary advantages for a quarantine. Nevertheless, in 1888 various influences brought about the Act of Congress authorizing

the removal of the station to some other island. This Act of Congress gave authority, but was not mandatory in its language. A Board was appointed March 10, 1888, to select a site for a new quarantine station, and though their orders required them to recommend some other site than Ship Island, the Board went out of their way, in the fourth paragraph of their report, inserted at the suggestion of Dr. Wilkinson, of Louisiana, to state as follows:

"There is no evidence to warrant the belief that the presence of the national quarantine station on Ship Island is a real source of danger to the inhabitants of the Gulf coast, but all testimony points absolutely to the fact that the absence of an efficient quarantine service at that place will afford a probable inlet to contagious diseases into that vicinity."

This report was signed by Surgeon W. H. H. Hutton, of the Marine Hospital Service; Captain J. H. Parker, of the United States Revenue Cutter Service; Surgeon H. R. Carter, of the Marine Hospital Service; Dr. J. W. Mabin, of Biloxi, who represented Mississippi, and Dr. C. P. Wilkinson, of the Louisiana Board of Health. The Board reported that Chandeleur Island afforded the "next best" location, and accordingly the station was removed there in 1889, and, all told, about $85,000 was expended in its establishment.

Immediately thereafter the State of Mississippi established a quarantine at the abandoned site, performed active work there inspecting and disinfecting vessels, charging the customary fees therefor, and continued to do so with some intermission until 1894, when the United States establishment was replaced on Ship Island.

Commenting on the exposed position of Chandeleur, Surgeon Murray narrates that while he was in command of the station for a period of four and a half months, five vessels got aground, two of which became total wrecks, their crews being with difficulty saved. I personally inspected Chandeleur Station in 1890, and quote as follows from the annual report for 1891: "Chandeleur Island is thirty-four miles in length, running north and south, and extremely narrow, in many places being hardly more than a stone's throw in width. It is little else than a sand reef, with slight elevation above the waters of the Gulf of Mexico. The buildings are in the marshes, on piles. One corner of the surgeon's residence rests on dry land, about 30 x 100 feet in area, the only dry land on the premises." It is twenty-six miles out at sea, practically in mid-

Gulf, and presents all the conditions, including disaster, which furnishes the theme for Cable's story of the "Lost Island."

Surgeon Carter, while in command of the station, informed me personally that he had learned that this island was subject to periodic overflow by tidal waves, and, as had been predicted, in October of 1893, a tremendous storm and tidal wave swept over it, carried the hospital out to sea, and drowned a hospital steward, two attendants and two patients. It destroyed an extensive pier, on which were located the disinfecting machinery of the station, and not a vestige of the machinery has ever been recovered. It carried the steamer attached to the station high on to a sandspit, and it cost $3,000 to get her into water again; it injured the lighthouse to such an extent that the lighthouse establishment has been obliged to erect a new lighthouse. The medical officer in command, Dr. Guiteras, was for an hour in water up to his chest, holding on to the long grass, and barely escaped with his life. It still being the active quarantine season, and fearful that infection might be admitted following the destruction of the quarantine, Dr. Guiteras landed on Ship Island, and began at once the inspection of vessels at that point. He was ordered to continue this inspection, but the full function of this station was not exercised until the establishment had been authorized by law. There was no protest at this time against the re-establishment of the station on Ship Island, and, as will be seen from the annual report of the Marine Hospital Service for 1893, page 12, I gave a full account of the circumstances, and stated that some Congressional action would be required to legalize the establishment of a permanent station on that island, and in the appropriation bill, approved August 18, 1894, the transfer was legalized. To show that there was no protest against the re-establishment of the station, I have only to refer to a petition signed by pilots, masters of vessels, and physicians connected with the Mississippi State Board of Health, urging the re-establishment of the station on Petit Bois Island, an island still nearer to the coast than Ship Island, but more convenient to the city of Pascagoula, yet not so well adapted for a quarantine site, and before obtaining Congressional action above referred to, I had the chain of islands along the coast again examined by a senior officer of the Marine Hospital Service and a captain of the Revenue Cutter Service, with the result that no superior place to Ship Island could be found.

A full statement of the fact was made by myself in a letter to the

Secretary of the Treasury, dated June 16, 1894, and on the same date the then Secretary of the Treasury forwarded by letter to the chairman of the Committee on Appropriations in the Senate, calling attention to the letter, and asking for appropriation for a small hospital, ballast scows, and other items necessary for the station on Ship Island. As a matter of interest, I have caused an examination to be made of Chandeleur Island during last month, and have a report that where the surgeon's house stood there is now an inlet cut into the island, with sixteen feet depth of water, and that at every high tide the Gulf washes entirely over the portion of the island which was used for quarantine purposes. The utter impossibility of using Chandeleur Island, I believe, is thoroughly shown by the above statements.

Nonsensical objections to Ship Island on account of its alleged proximity to the shore having also been met, it now remains only to refer to the charges of the faulty management of the station, by which it has been freely alleged by interested parties that yellow fever gained admission to the coast last fall. The motives which prompted the rumor and the methods by which the rumor has grown are very plain, and may be summed up by the statement that they have been bruited for the double purpose of diverting criticism from other stations, places and persons, and casting discredit on a service which had been previously attacked with the result of the utter defeat of its assailants. More than a year ago a new Board of Health in Mississippi, influenced by one of its members, made strenuous efforts to establish a quarantine station of its own, with its positions of responsibility and importance and revenues to be derived by quarantine fees which attach to stations of that character. With entire disregard of the inconsistency of their action, this Board, while claiming that Ship Island was too near, established a quarantine station of their own on an adjoining island, namely, Cat Island, which is still nearer the coast, and then, on the plea of having their own quarantine, attempted to make the Government withdraw its quarantine from Ship Island. Of course, they failed and abandoned their project. But when the yellow fever appeared at Ocean Springs, then came the opportunity for the expression of suspicion in the public prints and misstatements as to facts. Ship Island was declared to be within five miles of the shore, the waters between being so shallow that people could almost wade ashore. It was charged that there was free and frequent communication between the quarantine station and the neighboring

coast. The medical officer in command, Dr. Smith, was declared to have so far forgotten his quarantine position as to pay a social visit on the cruiser Montgomery, which had anchored some five miles off. In fact, it may be said that the management of the station within the past three months has been under a veritable searchlight thrown by inimical hands, every effort being made to find some weakness in the administration. Every charge and every statement reflecting upon the station has been satisfactorily answered in the medical journals and in the public press of New Orleans and the towns of the coast, by the able medical officer in command, Passed Assistant Surgeon A. C. Smith. Never before has a quarantine station in this country been under such close scrutiny, and in my opinion no quarantine station in existence could present a clearer record of intelligent, painstaking administration than has been developed under this searching inquiry into the management of the Ship Island quarantine. Dr. Smith has manfully met every charge and even innuendo, and there is not a scintilla of evidence to connect the station with the recent outbreak of yellow fever. Ship Island is owned entirely by the Government. As before stated, it is uninhabited. The station is isolated. No expense has been spared in its equipment of officers and employés. During the active quarantine season there are three medical officers stationed there, and regular inspections of its management are made by inspecting officers, and their reports printed. The anchorages are plainly marked out by buoys. Vessels are guarded at night. No communication is held with the station, not even the furnishing of supplies, excepting through the medium of a transfer barge, anchored a mile from the island, where the transfer vessel leaves its supplies, which, after its departure, are transferred to the island by a boat from the station. If suspicion alone is sufficient cause for its removal, it may be remarked, "there are others."

Already there is a turn of sentiment in this matter. I have received recent protests from pilots and merchants of Biloxi against the removal of the station from Ship Island. Petitions have also been received, if it is to be removed, to remove it to Petits Bois Island, which is still nearer the shore, and recently, I am informed that the largest mass-meeting ever held in Biloxi declared unanimously for the station where it is, and endorsed the Marine Hospital Service, as well as national quarantine.

WALTER WYMAN,

January 3. Supervising Surgeon-General, M. H. S.

YELLOW FEVER OBSERVATIONS BY AN OCTOGENARIAN.

E. H. ANDERSON, M.D., Kirkwood, Miss.

As the present invasion of yellow fever is a matter of great public interest, and as I have been a close observer of its successive invasions since 1855, I have concluded to record the result of my observations.

Being familiar, from personal observations, with that at Canton in 1855, and the so-called invasion at Jackson in 1888, and having studied closely that of the present season, though not in it, I feel that the motive that prompts me neutralizes any apparent presumption.

It will be remembered that, in the invasion in Canton in 1855, it could not be traced to an imported germ; and from personal knowledge I thought I could trace it to local conditions, as they were suffering from a water famine and bad hygienic conditions. In that of 1888 at Jackson, facts proved it in the most conclusive way, under my own observation, to have been of local origin. The disease was confined strictly to the workmen who had been engaged in excavating about and tearing down an old depot, in the months of August and September, which were characterized by heavy showers. The examining physicians were in doubt as to the fever, yet it excited panic and there was a general hegira. The workmen alone contracted the fever, which did not even attack their families. In both of these invasions, it will be observed that no imported germs could be traced, and I might add that in both all the elements of malarial fever were present.

My knowledge of the present invasion is derived alone from reports obtained daily from the press, which, however, have been studied with the greatest care and interest, and this together with a personal knowledge of all the localities in Mississippi and Texas, except along the Gulf coast in Mississippi where the disease originated. All admit that the disease, dengue, was prevailing at the time as well as malarial fever.

One marked feature in the history of the present invasion is the doubt as to its specific type, and this exists wherever it has appeared

without regard to latitude. There is no doubt as to its permanent existence in Cuba and other tropical climates, and we know that all the causes of fever of a malarial type are more intensely operative, hence, we can reasonably argue that when our climate and local conditions approximate the tropical, we might reasonably suppose that our diseases would also approximate, and I firmly believe that to this cause is due the fever that has spread over our border States and to points in the interior where similar local conditions exist.

The history of yellow fever in New Orleans, which extends back fifty years to my knowledge, seems to prove this theory. It is a patent fact that since the invasion of General Butler, who put the city in better sanitary condition, New Orleans has enjoyed a greater exemption from the fever. This, connected with the history of the fever at Memphis, which city has enjoyed an exemption since its attention to hygienic measures, has strengthened my views as to local origin. The late invasion this season, located in its most neglected territory, sounds a note of warning that should not pass unheeded. Had we not had diseases differing from those in ordinary years, it would have militated against the firmly established doctrine of local causes producing specific effects.

In the invasion of the disease at Edwards, Clinton and other places, the public seem to think it the result of an imported germ from infected points along the coast, while it appears to me the natural result of local and climatic causes. At Edwards, where it was most virulent, I find all the elements and recognized causes of malarial fever. It is located in the vicinity of Big Black swamp, and one of our Confederate battlefields and burial grounds. As I am informed, its drinking water is supplied from wells, and the surrounding country is under cultivation. Owing to excessive drought the past season the infiltration into their wells would have been more heavily charged with the soluble elements of the soil and unpotable.

As to a specific germ or microbe, I confess I am skeptical. The fever of the present year has caused much contrariety of opinion as to its proper name; though the consensus of opinion with the fraternity "native and to the manner born" rather inclined them to regard it as malarial, they eventually recognized it as yellow fever; with this opinion I am in full accord, and recognize it as the product of local and climatic causes, and also the importance of using every hygienic measure in our power to prevent its recurrence.

In the character of the season, I think I can detect the cause of diversity of disease. Along our coast line, as well as that of Texas, unusual climatic and meteorological causes have been in operation, and they have produced their natural effects. In all alluvial localities there has been an unusual effluvium thrown into the atmosphere, under the influence of a higher range of temperature, and in fact we have nearly approached a tropical temperature, and as a natural consequence have approximated its diseases.

A very natural deduction from the foregoing premise is that we should use every means in our power to protect us from such invasions, and chief among the means are drainage and pure water, and these preventive measures are within the reach of our Southern cities and large towns. The cost would be less than the loss by quarantine, to say nothing of the irreparable loss of life. To those who believe in the germ as the *fons et origo* I would remark that the germ cannot live or flourish in a pure atmosphere.—Memphis Medical Monthly, December, 1897.

MEDICAL EXCERPT.

By T. P. Corbally, A. M., M. D.

Section of the Frenum-Sublinguae—Death.—M. Reboul, of Nimes, reports a case in which the frenum linguae was divided by Dr. Dustand, in an infant, a few hours after birth, although he took the usual precautions in such cases.—La Clinique, December, 1897.

A slight hemorrhage followed the section, which yielded readily to a tampon, but returned again after a little time and continued mildly but resisted all the means employed to suppress it: digital compression, compression with wadding, the forceps, percloride of iron, antipyrine, etc.

Dr. Reboul saw the child three days and a half after the commencement of the hemorrhage, and tried to arrest it by means of compression, but without success; galvano-cautery was equally unsuccessful, and finally he used subcutaneous injections of serum.

Local means continued to be employed, sometimes effecting a partial cessation, but the flow always returned, especially around the escars caused by the galvano-cautery. The wound continued

to increase in size, caused principally by the movement of the tongue by the child and by the means used to arrest the bleeding. Eight injections of serum were made (150.200 grammes) at variable intervals. After each injection the infant seemed to rally; but the hemorrhage continued, and the child gradually became very feeble. She was extremely pale, ecchymosis appeared beneath the nails, and the punctures became the starting point for others; hemorrhagic erosions appeared around the arms, and the child died from loss of blood five and a half days after the section of the frenum linguae.

The parents of this child lost another child the year before, without apparent cause. The mother died recently from hasty consumption.

In doubtful cases Dr. Reboul thinks it necessary to be very cautious or to defer the operation until the peculiar diathesis can be determined.

ERYSIPELAS AND STREPTOCOCCUS.—M. Courmont, of Lyons, has made a report of his experiments, to the Académie des Sciences, which prove that the serum of Marmoreck does not afford immunity, in the rabbit, against the streptococcus of erysipelas.

THE ANTITOXIC ACTION OF BILE.—M. Phisalix, experimenting with the poison of serpents (Gazette Hebdomadaire, December 19th), has demonstrated the antitoxic action of bile. Colesterine and the biliary salts are the vaccine elements against such poisons. The action of the bile explains how certain toxic agents lose their peculiar property in the digestive tube.

THE NATURE OF CHLOROSIS.—The true nature of chlorosis is a subject full of interest for the physician. M. Capitan (Gazette Hebdomadaire, 19th December, 1897) has presented some very interesting considerations on the subject to the Société de Biologie:

For some time the tendency has been to consider chlorosis, not as a morbid entity, but as a condition that may be determined by a variety of causes. Such is the conception formed of chlorosis, as an auto-generative intoxication, according to the theory of Charrin and Spillman, that is also the opinion of Clarke, who treats chlorosis as an intoxication of intestinal origin.

The author directs attention to a form of chlorosis which seems to have an individuality peculiar to itself, which might be named "Thyroidian chlorosis."

It is well known that an increase in the size of the thyroid gland is frequently met with in chlorotic patients. Professor Hayem has found this condition in 29 cases of the 35 examined by him within a comparatively short time. If the condition of the thyroid be examined in these cases, it will be found that it is a case of goitre, more or less well marked, but soft and free from pulsation; sometimes, on the contrary, they are more resisting and have occasionally very violent pulsations. In the former case, there are none or few of the symptoms of Bassedam's disease; while they are distinct and sometimes very characteristic in the latter.

It may be objected that, in the latter case, it is simply a co-existence of chlorosis and exophtalmic goitre. Founding an opinion on a great number of observations, chlorosis is in these cases the result of Basedow's disease; it is a form of thyroidian intoxication.

If, in cases of the disease treated for a long time with the remedies usually employed without success in chlorosis, a solution of iodo-ioduree, rather strong, be given, an evident improvement of all the symptoms will follow rapidly.

But, in addition to this, if tablets of iodothyrine be given to the exclusion of other remedies, the symptoms of chlorosis, as well as those of Basedow's disease, will improve rapidly, and will disappear completely after treatment for a few weeks. I have observed many such cases in my service at *la Pitié*, with my assistant Jeulian, who has taken the subject for his thesis.

The author proposes to continue his observations on the subject, for the purpose of determining clinically and therapeutically if this hypothesis can be accepted as well founded.

A COMPROMISE.—A boy was caught in the act of stealing dried berries in front of a store, the other day, and was locked up in a dark closet by the grocer. The boy commenced begging most pathetically to be released, and after using all the persuasion that his young imagination could invent, proposed, "Now, if you'll let me out, and send for my daddy, he'll pay you for them, and *lick me besides.*" This appeal was too much for the grocer to stand out against.

EDITOR'S TABLE.

SANITARIAN, FEBRUARY NUMBER, 1898.

☞ ALL correspondence and exchanges and all publications for review should be addressed to the Editor, DR. A. N. BELL, Brooklyn, N. Y.

MORE ABOUT THAT FAKE BILL.

To the Editor of the Sanitarian:

I am quite sure your attention has only to be called to the references to me on page 540 of the December issue of THE SANITARIAN as to my having offered a resolution at the recent meeting of the American Public Health Association, "recommending the establishment of a National Board of Health with a politician for president," and again on page 543, that "excepting Dr. Gihon's resolution the meeting was an eminently successful one."

I leave to my associates of over twenty years in the American Public Health Association, who were present on that occasion, to comment upon your reporter's understanding of a successful meeting. His first statement is no less heedless, if not malicious, since the resolutions I offered, and which were adopted, were (1) That the report of the Committee on Public Health Legislation, of which Dr. Henry P. Walcott, president of the State Board of Health of Massachusetts, was chairman, should be accepted and approved, and (2) that the scheme of a National Department of Health therein proposed should be recommended to the Congress of the United States. As your reporter has omitted any reference to these facts, as well as to certain other incidents of the meeting, it is charitable to attribute his inaccuracies to inexperience, if not malevolence. After our intimate relations of forty years, I shall not believe that you would allow me to be misrepresented in a journal which has so long displayed my name among your collaborators. If I did so believe I should have asked to have it removed in short order; but I have no such intention.

ALBERT L. GIHON.
Medical Director U. S. Navy (retired).

Reform Club, 31st December, 1897.

The Editor regrets that THE SANITARIAN should have been led to misrepresent Dr. Gihon and the American Public Health Asso-

ciation by the *misrepresentations of the Journal of the American Medical Association.*

The Editor, not having been present at every session of the American Public Health Association meeting, in making up his abstract of the proceedings, as published in the December number, found it necessary to glean in part from other sources, and as the *Journal's* assiduous and skilled reporter was thought to have been present at every session, the first paragraph in its leading editorial, November 6th, was unfortunately accepted as being true. It reads as follows:

"It is with pleasure that we inform the members of the Association that the Association Bill to establish a Department of Public Health, and define its duties, has been approved in its entirety by the American Public Health Association at the last meeting in Philadelphia, and that body will co-operate with the Association and endeavor to have it placed upon the statute books."

Alas, alas! The Editor of THE SANITARIAN has acquired considerable knowledge of the doings of the Editor of the *Journal*—more before than since he so became—and has had occasion to expose their false premises and bad results. Yet he was wholly unprepared for any such misrepresentation as that which is comprehended in the quotation—there being *no such bill, no such action* by the American Public Health Association, and *no such intention* by that body. The "bill" referred to is, as stated in the postscript to the editorial on it in our December number, the report of a committee of the American Medical Association which was not endorsed by that body, but referred back. And if recent reports concerning it are true, it is, at the time of this writing, in process of reconstruction by the committee in an endeavor to make it presentable to Congress *without* the endorsement of the American Medical Association.

The action of the American Public Health Association was, as stated by Dr. Gihon, without any reference to co-operation with the American Medical Association, "to have it" (the fake bill with a politician for president) "placed upon the statute books."

As for the rest of Dr. Gihon's letter, heedlessness, if not maliciousness, is sometimes inferable from unseemly contention—such as that in which he indulged with Dr. Bailhache with reference to the Marine Hospital Service. We are glad to understand from Dr. Gihon's correction, however, that his remarks on the occasion were devoid of any hostile feeling, however much they may have seemed to indicate it. Hence it hardly seems necessary to say that,

all the premises being wrong, so too are the inferences and remarks upon them. We hereby declare them from beginning to end a nuisance *abated.* No nuisance of that kind or any other shall ever be allowed to interrupt our intimate relations, which have obtained, as he reminds us, these eighty years. No, never; we will continue to fight it out on this line into the next century, and woe be to any nuisance that ever dares to emanate between us!

KINGS COUNTY EFFLUVIUM PRODUCERS.—Governor Black, following in the footsteps of his two predecessors, Hill and Morton, has issued a precept condemning the offal and garbage works upon Barren Island. The report of the State Board of Health was made October 25, 1897, while the Governor's action bears date of January 7. We notice that the garbage-reduction plant is in the same group of offensive businesses, or trades, as the notorious fish factory, and the five various condemned plants are alike called upon to apply to the State Board of Health for a permit to conduct their operations in a manner conformable to the regulations of that Board.

DR. FELIX FORMENTO HONORED BY THE KING OF ITALY.

Signor Carlo Magenta, the representative of the Italian Government in New Orleans, recently presented to Dr. Formento in person, in the name of the King of Italy, a handsome token of appreciation of valuable services rendered by him as sanitarian and physician during the late yellow fever epidemic. It consisted of a Maltese cross in green and white enamel, surmounted by an exquisitely chiselled crown of gold, suspended by a green moire silk ribbon, representing the rank of officer of the Order of Saints Mauritius and Lazarus.

Dr. Formento has also received a letter from the Minister of Foreign Affairs of Italy, Count Visconti-Venosta, complimenting him upon this well-merited distinction.

The Order of Saints Mauritius and Lazarus is one of the oldest Orders in existence, having been founded in 1119 in Jerusalem. It is the Legion of Honor of Italy, and corresponds to the Legion of Honor of France, and is given for distinction in both military and civil life.

This is not the first time that Dr. Formento has been so honored by the head of the Italian Government, as he was the recipient of the Cross of Chevalier of the same Order some years back for valuable services rendered during the epidemic of 1878. The cross just received is a promotion in the Order.

MORTALITY AND MORBILITY REPORTS AND REVIEWS.

Correspondents under this head are particularly requested to be as prompt as possible.

HEALTH OF THE ARMY.

Report of the Surgeon-General of the Army for the year ending June 30, 1897:

The admissions to sick report per thousand of strength were 1,110.39, as compared with 1,110.22 in the previous year, and with 1,089.73 in 1894, which was the lowest recorded admission rate for all causes; but it is to be observed that an excess of injuries in the past two years raised the total rate, while the admission rate for disease in both years was lower than in 1894—830.65 during the past year, 837.53 in 1895, and 845.52 in 1894. The average length of time each case was under treatment was 11.19 days, as compared with 11.14 in 1895 and 11.69 as the average of the previous decade. The number of days lost on account of sickness for each man in the army was 22.43 days, as compared with 12.37 in the previous year and 14.93 the average of the previous decade. The number constantly noneffective per thousand of strength was 33.97, as compared with 33.89 in 1895. The noneffective rate during the decade prior to 1895 averaged 40.92 per thousand of strength. The discharge rate for disability was 10.15 per thousand of strength, as against 9.15 in the previous year; but that the lessened nonefficiency of recent years does not result from discharging men for disability is easily recognized when we observe that the discharge rate of the decade prior to 1895 was 21.77 per thousand of strength. In those ten years a higher nonefficient rate prevailed notwithstanding the considerably larger number of men discharged from the ranks on account of persisting disability.

The absolute number of discharges was 276. Injury was the cause in 55 cases; disease in 221 cases. Sixteen of the cases due to injury were ruptures for which the men declined operation; 10 were the result of gunshot wounds. Of the discharges due to disease, 34 were occasioned by tuberculosis of the lungs, 27 by rheumatism and myalgia, 24 by disease of the heart, and 13 each by diseases of the eye and ear. The largest number discharged from any one post was 12 from Fort Thomas, Ky., equal to a rate of 24.84 per thousand of strength; but larger rates than this were reported from three other posts—26.95 given by 10 discharges at Fort Clark, Tex.; 27.21 by 8 at Fort Grant, Ariz., and 38.10 by 8

at Whipple Barracks, Ariz. Besides these discharges, there were 118 men discharged in accordance with the provisions of section 3, paragraph 140, Army Regulations, for disability contracted before enlistment, or by misconduct or bad habits; 51 of these discharges were on account of venereal diseases.

The death rate from all causes constituted 5.44 per thousand of the strength—not much higher than that of the previous year, and much lower than the average annual rate, 7.51, of the previous ten years. The corresponding rates from disease were 3.83, 3.55, and 5.10; from injury, 1.62, 1.61, and 2.41. The absolute number of deaths was 148, of which 44 were results of injury and 104 disease. Typhoid fever caused 17 of these deaths; diseases of the heart, 13; pneumonia, 9; disease of the kidneys, 8; alcoholism, 7; tuberculosis of the lungs, 6; gunshot injuries, 14, and fractures not gunshot, 7. The largest number of deaths at any one post was 10 at Fort Sam Houston, Tex., giving a death rate of 15.48 per thousand of strength; but leaving arsenals and small posts out of consideration, the largest death rates were 23.81, caused by 3 deaths at Fort Ringgold, Tex., 18.47 by 7 deaths at Fort Robinson, Neb., and 17.39 by 6 deaths at Jefferson Barracks, Mo.

It may be well to notice the great improvement that has taken place in the past few years in the sanitary condition of the colored troops as manifested by their lessened rates of sickness, disability, and death. The white troops have participated in the improvement, although their rates have not fallen so rapidly as those of the colored men. There was no doubt greater room for improvement in the sanitary status of the colored troops, and the men may have responded with more earnestness to efforts in this direction. During the past year the total admission rate for all causes among the colored troops was 868.88 per thousand of strength, as compared with 1,132.49 among the whites for the same year, and as compared with 915.88 among themselves in the previous year, and with 1,368.64 their own annual average for the previous decade, the annual average of the white troops having been 1,284.95. The nonefficiency from all causes among the colored troops during the year was 25.75 per thousand of strength, as compared with 34.72 among the white troops. The colored soldier lost 9.42 days from disability during the year, the white soldier 12.71; and the average time of treatment of each case was among the colored troops, 10.82 days; among the whites, 11.22 days. The causes of disability from which the colored men suffered less than the white troops

were malarial fevers, venereal diseases, alcoholism, diarrhoea, and injuries; those from which they suffered more were neuralgia, rheumatism and myalgia, tonsilitis, colic and constipation, conjunctivitis, and pneumonia.

To the different military departments the admission rate varied from 1,246.37 per thousand of strength in the Department of the East to 762.18 in the Department of California. It was above the army average in the Departments of the East, Texas, the Platte, the Colorado and the Missouri; but this was offset by lessened rates in the Departments of the Columbia, Dakota, and California.

The rate of nonefficiency, or constant disability, was above the army average of 33.97 per thousand of strength in three of the departments—the Missouri, Texas, and the Platte; but the highest rate, that of the Department of the Missouri, was only 37.23. The rates in the Departments of the East and the Colorado were below the average, but above 3 per cent. of each command. Those of the Departments of Dakota, the Columbia, and California were below 3 per cent., that of California, the lowest, being only 24.02 per thousand of strength.

The death rate in the Department of Texas, 9.28 per thousand of strength, was considerably higher than the average of the army, 5.44. This rate in the Departments of the Missouri, the Colorado, and the Platte was slightly above the average, while in the Departments of Dakota, the East, California, and the Columbia it was below the average, the rate of the last-mentioned department being only 2.01 per thousand of strength.

The rates of discharge for disability varied from 12.29 per thousand of strength in the Department of Dakota to 7.15 in the Department of California, as compared with the army average of 10.15. In three of the other departments—Texas, the Colorado, and the Missouri—the rates were above the average. In the Departments of the Platte, the East, and Columbia they were below the average.

Considering all the rates for the calendar year, the Department of Texas had probably the worst record and the Department of California the best record among the military departments.

Sanitary Condition.—The quarters provided for the enlisted men of our army at posts recently built are excellent in their sanitary arrangements. At some of the old posts the buildings are more or less in want of repair, sometimes overcrowded, with inadequate ventilation and primitive methods for the removal of wastes.

Every year, however, shows some improvement in the condition of these posts. It is to the credit of those concerned that when attention is called to remediable sanitary faults by the monthly reports of the medical officer immediate action is taken by the commanding officer, if it lies within his power, or by an allotment of money for the purpose by the Quartermaster's Department.

Defective Drainage was reported from a few of our military posts during the last year. For instance, Maj. J. D. Hall, surgeon, stated April, 1897, that some of the outlying grounds in the neighborhood of Fort Wadsworth, N. Y., were of a marshy character, and evidently gave origin to malarial diseases. The quartermaster was directed to prepare estimates for the draining of these marshes.

Pure Water for Troops on Active Service.—Maj. S. Q. Robinson, surgeon, in his report on the fevers of Fort Reno, Okla., pointed out a well-marked coincidence between the prevalence of fever and the amount of field service performed by the troops forming the garrison. This coincidence had already been noted in the experience of many of our army medical officers. Post surgeons in referring to the causation of low fevers in their commands have frequently taken occasion to explain that these did not originate in insanitary conditions at the post, but were incurred by the men while absent on field service. Dr. Smart discussed this subject in a letter, July 6, 1897, addressed to this office, and urged the use of portable filters for commands in the field as certain to lessen the number of such febrile cases. His personal experience on a march with Troop E, First Cavalry, in a country where the surface water supply is always bad, and at a time when it was at its worst, demonstrated the practicability of filtering water supplies for troops on field service. Favorable action was taken on Dr. Smart's communication, which was as follows:

"I have the honor to invite attention to the advisability of providing portable water filters for troops operating in the field. Such commands are usually dependent on surface water supplies, and I take the position that surface water supplies are always dangerous. I desire to point out that in the early days of the settlement of our western country fevers were common, both in military commands and in civilian communities. These fevers were of an adynamic type. By some observers they were regarded as malarial remittents, by others as specific typhoid fevers, while others again, among whom was myself, considered that, although the majority of the cases were of malarial origin, occasional cases were due to

the specific cause of enteric fever, either developed de novo or propagated from some previous case. Notwithstanding differences of opinion as to the nature of the fevers, there was a general belief that the water supply was concerned in their causation. This belief became strengthened as continued observation showed that these fevers diminished in prevalence both at military stations and in civilian settlements as purer water supplies were obtained. At the present time these fevers are of more frequent occurrence in military commands in the field than among the troops stationed at permanent posts, and in temporary civilian camps or growing settlements than among communities that have expended money in improving their water supplies.

"The advisability of providing pure water for troops in the field as well as for those at permanent posts may be considered evident. The possibility of making this provision seems to have been hitherto an untried experiment, at least in this country.

"Recently in field operations with Troop E, First Cavalry, in Oklahoma Territory, I desired, if possible, to preserve the men from disease due to impure water. The object of the field service was to test the value of the emergency ration. Obviously, this value could not be appreciated if the men under observation were to become sick from influences other than those connected with their special diet. Diarrhoea or fever caused by impure water might be attributed to dietetic causes, and so cast odium on the ration. Hence to give the ration fair play, it became a special object to provide the men with pure water. To this end I consulted Maj. Walter Reed, curator of the Army Medical Museum, who provided me with a filter which he had subjected to many severe bacteriological tests. This filter answered its purpose excellently. My experience with it showed the possibility of carrying on field service a machine which will supply a pure water for a company of troops from a foul stream or stagnant pond.

"Since this can be done, I respectfully urge that it should be done; that a certain number of warranted filters should be kept available for the use of troops ordered to field duty.

"The expense incurred in making this provision would be an economy to the Government, not only in saving the lives of good men, but in lessening the expenditure of money for pensions to men disabled or to the families of men dead from preventable fevers. There are men on the pension rolls now drawing $72 per month for disability due to typhoid fever, a disease which would not occur or

which would be extremely rare, in commands in the field provided with an efficient filter.

"It may be said that the expenditure for filters is unnecessary as the men can protect themselves by boiling the water. The men tried to do so, old soldiers particularly, and there is always in a troop or company enough of such veterans to leaven it and raise its younger members in the tried and accepted methods of avoiding insanitary conditions. The boiling resolves itself into making a weak coffee over night to fill the canteen for the next day's march; but it is not always possible to do this, or the canteen becoming empty is filled again on passing the next muddy stream or water-hole.

"I do not require to leave the neighborhood of Fort Sill, Okla., in which the test of the emergency ration was made for an illustration of the harmful effects of impure water on troops in the field. Maj. E. T. Comegys, surgeon of that post, informed me officially that in June, 1896, Troop H, First Cavalry, 47 strong, formed the escorting party for money to be paid to the Indians on the reservation. Nine men of this command became affected with typhoid fever and two died, as the result of insanitary conditions on this trip. Troop E, First Cavalry, 46 strong including myself, rode over much of the same ground in May, 1897, and filtering our water supplies from the same creeks, returned to Fort Sill without a man sick. This alone, it seems to me, establishes the position which it is the object of this communication to sustain, the advisability of providing pure water supplies for troops in the field, since the recent expedition to test the value of the emergency ration has shown that it can be done."

ALABAMA.—W. H. Sanders, M. D., State Health Officer, Montgomery.

Mobile, 37,817. J. A. Abrahams, M. D., Health Officer.

At the instance of Dr. W. H. Sanders, State Health Officer, a Quarantine Convention is announced to assemble here in the second week of February, to consist of delegates representing every profession and business of the South Atlantic and Gulf States, for the purpose of studying in an exhaustive way the theory and practices of quarantine. After the manner, presumably, of the first National Quarantine and Sanitary Convention, called by Dr. Wilson Jewell, deceased, of Philadelphia, the pioneer of quarantine reform, and held in Philadelphia, May 13-15, 1857; and consecutively in Balti-

more, New York and Boston, in 1858, '59 and 60. The following preliminary programme of subjects to be discussed is submitted:

1. Quarantine with reference to international rights and interests.
2. Federal and State powers as to quarantine.
3. State and national quarantine as affecting commerce.
4. Quarantine as it affects personal rights.
5. Sanitary inspectors of foreign ports. What is being and can be done in this direction. Sanitary conditions of foreign ports that menace us most, and what can be done to improve them.
6. Policing the sea along the South Atlantic and gulf coast to prevent the introduction of contagious and infectious diseases. What is being and can be done.
7. National disinfecting stations for ships; where located, how operated, under what rules, with what results and whether others are needed.
8. State maritime disinfecting stations; how many, where located, how operated, under what rules, and with what results.
9. Medical inspectors of south Atlantic and gulf sea ports and coast towns to discover first case or cases of infectious or contagious diseases; how best to provide for.
10. What step should be taken in dealing with first case or cases of infectious or contagious diseases that may reach our shores.
11. State and local quarantines; how best to adjust their relations.
12. Depopulation of infected cities; how to accomplish, and to what points may refugees go.
13. Quarantinable diseases; what are they and how should they be dealt with.
14. Infection; how conveyed and period of incubation of infectious diseases; disinfection; when needed and how applied.
15. The mails and quarantines; how practically to deal with them when proper authority has declared that they should be disinfected.
16. Management of railroad trains during an epidemic of yellow fever, from a railroad standpoint.
17. Classification of freights as to their liability of conveying infection.
18. What may be done to check the spread of and to exterminate yellow fever after it has become prevalent in a city.
19. Boards of health; of whom should they be composed and how should they be appointed. To whom should the practical administration of quarantine be committed.
20. Practical difficulties in diagnosing yellow fever.
21. Interstate quarantine from a constitutional, commercial and sanitary point of view.
22. Experiences of a quarantine officer in the recent epidemic.

23. National quarantine.
24. A national bureau of public health.
25. The relation of the press to epidemics and quarantine.
26. Quarantine from a moral standpoint.
27. Necessary and unnecessary regulations in the name of quarantine in the recent epidemic.
28. Introduction of yellow fever into the country in the past. From what places introduced and how.

And Congress has been petitioned to hold any action it may contemplate with reference to the subject, in abeyance on this meeting.

CALIFORNIA.—C. A. Ruggles, M. D., President, Stockton; W. P. Matthews, M. D., Secretary, Sacramento.

San Francisco, 360,000. Report for November: Deaths, 581—101 under five years of age. From consumption, 93; acute pulmonary diseases, 76; from zymotic diseases, 37; diphtheria (and croup), 15; typhoid fever, 5. Annual death rate, 193. Contagious diseases reported during the month: Diphtheria, 51; scarlatina, 4.

Los Angeles, 103,000. Report for November: Deaths, 133. From phthisis, 34; acute pulmonary diseases, 8. Annual death rate, 15.49. "N. B.—Of the 34 deaths from pulmonary consumption 25 had lived here less than 10 years."

COLORADO.—Denver, 160,000. William P. Munn, M., D., Health Commissioner, reports for November: Deaths, 137. Of these 34 were caused by consumption, 30 contracted elsewhere; 5 by acute pulmonary diseases. Annual death rate, 12.52 (excluding phthisis contracted elsewhere), 8.03. The weather: The mean barometric pressure during the month was 24.72 inches; mean temperature, 41°; total precipitation, 0.24 inches; mean relative humidity, 54 per cent.

Colorado Springs—20,000. B. B. Glover, M. D., Health Officer, reports for December, 24 deaths, of which 6 were under five years of age. Annual death rate, 13.0 per 1,000. From pneumonia, 4; from tuberculosis, 6.

CONNECTICUT.—Professor William H. Brewer, Ph.D., New Haven, President; Prof. C. S. Lindsley, M. D., Secretary, New Haven. The Secretary's bulletin for December comprises returns from 168 towns, representing a population of 883,192. There were 1,087 deaths reported during the month; 34 more than in November; 55 less than in December of last year, and 48 less than the average number of deaths in December for the five years preceding the present. Deaths under five years of age, 248.

The death rate was 14.3 for the large towns; for the small towns 15.9, and for the whole State 14.7. Deaths from zymotic diseases, 107, being 9.8 per cent. of the total mortality. From diphtheria, 48; typhoid fever, 12; whooping-cough, 9; scarlatina, 3; malarial fever, 5; consumption, 34; pneumonia, 114.

DISTRICT OF COLUMBIA, 276,963—88,176 colored.—Wm. C. Woodward, M. D., Health Officer, reports the mortality for four weeks ending December 25, 404. Of the decedents, 221 were white and 183 colored, the death rate being 14.3 for the white, 26.7 for the colored, and 20.5 for the whole population. The principal causes of death were: Zymotic diseases, 42; constitutional, 97; 54 were from consumption and 55 were from pneumonia. Of the zymotic class there were 14 fatal cases of diphtheria, 13 of typhoid fever, and 2 of scarlatina.

ILLINOIS.—L. Adelsberger, M. D., President, Waterloo; J. A. Egan, M. D., Secretary, Springfield.

Chicago, 1,619,226. A. R. Reynolds, M. D., Commissioner, reports for November: Deaths, 1,613—496 under five years of age. From diphtheria, 75; typhoid fever, 44; consumption, 170; pneumonia, 160; bronchitis, 78. Contagious diseases reported: Diphtheria, 267 cases; scarlatina, 117 cases.

INDIANA.—H. Jamerson, M. D., President, Indianapolis; J. N. Hurty, M. D., Ph. D., Secretary, Indianapolis.

The State Board Bulletin reports for the three months ending September 30, 1897, 4,342 deaths—an increase of 584 over the preceding quarter; 210 of this increase was due to typhoid fever and diphtheria. 462 deaths from phthisis were reported, being 74 less than preceding quarter. From scarlet fever there were 10 deaths, of 230 cases reported, being a decrease of five deaths and an increase of 57 cases. Cases of diphtheria reported, 484; deaths, 125—25.8 per cent. The mortality for the preceding quarter from diphtheria, was 47.8 per cent. The mortality from measles for this quarter was 7.1 per cent. of the cases.

IOWA.—E. H. Carter, M. D., President, Des Moines; J. F. Kennedy, M. D., Secretary, Des Moines.

The State Board Bulletin for November, reports since preceding: Diphtheria, 29 localities; scarlatina in 10; typhoid fever in 3.

Davenport, 35,000. W. L. Allen, M. D., Physician to Board of Health, reports for November 17 deaths—4 under five years of age. Typhoid fever caused 1 death; consumption, 2.

KANSAS.—E. M. Hoover, M. D., President, Halstead; H. Z. Gill, M. D., LL. D., Secretary, Pittsburg.

LOUISIANA.—R. S. Oliphant, President, New Orleans; G. F. Patton, M. D., Secretary, New Orleans.

New Orleans, 275,000—80,000 colored.—The annual death rate, weekly, since the outbreak of yellow fever, was: For the week ending September 4, 18.60; September 11, 19.73; September 18, 20.48; September 25, 19.92; October 2, 22.58; October 9, 25.80; October 16, 28.08; October 23, 28.84; October 30, 30.26; November 6, 28.65. Average, 24.29. Taking (Times-Democrat) the very highest estimate yet made of the number of people absent from the city, it would give New Orleans a mortality during the prevalence of the yellow fever of only 25.01 per thousand. As a matter of fact, the mortality is less than the average.

MAINE.—C. D. Smith, M. D., President, Portland; A. G. Young, M. D., Secretary, Augusta.

MARYLAND.—John Morris, M. D., President, Baltimore; John S. Fulton, M. D., Secretary, Baltimore.

Baltimore, 506,398—73,344 colored.—James F. McShane, M. D., Health Commissioner, reports for November: The weather—the mean barometric pressure during November was 30.13 inches; mean temperature 46°; total precipitation 4.39 inches, an excess in precipitation during the month of 1.15 inches; prevailing direction of wind West.

The total deaths were 815, an increase of 181 compared with the coresponding month of November, 1896. Of these 634 were whites and 181 colored; a death rate of 17.65 per thousand for the former and 28.96 per thousand for the latter. The death rate per thousand for the whole population was 19.30. 79 died from infectious diseases, 97 from consumption, 71 from pneumonia, 7 from enteritis, 3 from enterocolitis, 21 from Bright's disease, 2 from cholera infantum, 5 from diarrhoea, 19 from typhoid fever, 4 from gastroenteritis, 41 from bronchitis, 35 from nephritis, and 4 from dysentery. 232 or 28.49 per cent. of the total deaths were in children under five years of age.

During the month 548 cases of infectious diseases were reported, an increase of 140 compared with the preceding month. 121 deaths occurred in public institutions, of which 32 were reported as non-residents.

MASSACHUSETTS.—H. P. Walcott, M. D., Chairman, Cambridge; S. W. Abbott, M. D., Secretary, Boston.

Boston, 516,305. Samuel H. Durgin, M. D., Chairman of Board of Health.

During the month of November there were 813 deaths, of which number 230 were under five years of age. Annual death rate, 18.89 per 1,000. Deaths from diphtheria (and croup), 25; scarlatina, 1; typhoid fever, 18; cerebro-spinal meningitis, 6; consumption, 113.

An important decision:

The decision of Judge Hardy, of the Superior Court, in favor of the defendant in a suit brought by the father of a family against Medical Inspector Shea of the Boston Health Department, for $5,000 damages, for having forcibly removed three of the plaintiff's children, who were ill with diphtheria, from their home to the City Hospital, would seem to settle a mooted question as to the power of municipal health authorities under the statutes relating to the treatment of contagious diseases in a household. In this case the medical inspector found that the children could not be properly isolated at home, and, acting under the orders of the Board of Health, he removed them to the City Hospital, where they all recovered. Judge Hardy's decision not only establishes the soundness of the law, but furnishes encouragement for the enforcement of all reasonable regulations in the interest of the public health.

MICHIGAN.—Hon. Frank Wells, President, Lansing; Henry B. Baker, M.D., Secretary, Lansing.

The Secretary reports for the month of December, 1897: Compared with the preceding month, influenza and pneumonia increased and intermittent fever and diarrhoea decreased in area of prevalence. For the month of December, 1897, compared with the average for December in the 11 years, 1886-1896, consumption, intermittent fever, pneumonia and erysipelas were less prevalent.

Reports from all sources show consumption reported at 6 places more; diphtheria at 19 places more; typhoid fever at 27 places less; scarlet fever at 15 places more; measles at 19 places more; and whooping-cough at 2 places more, in the month of December, 1897, than in the preceding month.

The total number of deaths returned for December, per State Bulletin, was 2,105, an increase of 120 over the month of Novem-

ber. As December has one more day than November, the actual increase in mortality was very slight, the death rates, after making allowance for different lengths of the months, being 11.3 and 11.1, respectively.

The weather for December, 1897, was abnormally cold; with the exception of 1892 and 1893 it was the coldest December on record during the past ten years. During this month the mean monthly temperature was 24.3 degrees or 4.0 degrees lower than the normal or average December temperature. The coldest December of which we have record is December, 1893, when the monthly mean was 22.4 degrees; the warmest was December 1889, with a monthly mean of 35.1 degrees. The month just past was 2.3 degrees colder than the one preceding it.

The highest temperature during the month was 65 degrees, on the 9th and 10th at Coldwater; the lowest, 22 degrees, at Grayling. On the 17th and 18th a decided cold wave passed over the State, and the decreased temperatures which resulted remained until the close of the month.

The precipitation as a whole, was nearly normal and fairly well distributed throughout the State and during the month. The average total amount, 2.41 inches, is much greater than that for December, 1896, which was only 0.95 of an inch, and which is also the smallest monthly amount on record; the greatest is 4.89 inches during December, 1895.

MINNESOTA.—Franklin Staples, M. D., President, Winona; H. M. Bracken, M. D., Secretary, St. Paul.

Minneapolis, 225,602. H. N. Avery, M. D., Commissioner, reports for December: Deaths, 69; 50 under five years of age. Deaths: Consumption, 15; typhoid fever, 8. Annual death rate, 8.14.

St. Paul, 215,582. A. J. Stone, M. D., Commissioner. Mortality for December, 113; 35 under five years of age. Deaths from diphtheria, 2; consumption, 14; pneumonia, 13. Annual death rate, 6.26.

MISSOURI.—E. L. Standlee, M. D., President, St. Louis; Paul Paquin, M. D., Secretary, St. Louis.

The newly appointed members of the State Board are: Dr. L. C. McElwee, St. Louis, Homeopath; Dr. John T. McClanaham, Boonville, Eclectic, and Drs. O. A. Williams, Versailles, and S. C. James, Kansas City; as a whole, four regular physicians, two Eclectic and one Homeopathic.

Jefferson City, January 8. The Board met and organized, electing the following officers: Dr. E. L. Standlee, of St. Louis, President; Dr. A. O. Williams, Versailles, Vice-President; Dr. Paul Paquin, St. Louis, Secretary. The Board arranged for free examinations of specimens of throat for diphtheria, of blood for typhoid fevers, of sputum for consumption and of well waters for fevers. The board recommended in its report to the governor the passage of a law providing for a board of medical education, leaving the health board sanitary duties only.

St. Louis, 600,000—35,000 colored. M. C. Starkloff, M. D., Commissioner of Health, reports for November: Deaths 718; 177 under five years of age; from zymotic diseases, 119; diphtheria, 47; typhoid fever, 15; phthisis, 71; pneumonia, 80. Annual death rate, 13.4.

Kansas City, 175,000. E. Von Ouast, M. D., Health Officer, reports for November: Deaths, 135; 39 under five years of age. Deaths from typhoid fever, 2; phthisis, 8; tuberculosis, 4; pneumonia, 8. Annual death rate, 9.26.

NEW JERSEY.—C. F. Brackett, M. D., President, Princeton; Henry Mitchell, M. D., Secretary, Asbury Park.

Paterson, 108,268. J. L. Leal, M. D., Health Officer, reports for October: 173 deaths; 38 under five years of age. Annual death rate, 10.5. Deaths from diphtheria, 12; consumption, 17; pneumonia, 18.

For the year ending March 20, 1897, there were reported 1,978 deaths, of which 852 were under five years of age. Death rate per 1,000, 19.11. Scarlatina caused 10 deaths; measles, 27; diphtheria and croup, 160; whooping-cough, 29; typhoid fever, 49; diarrhoeal diseases, 195; consumption, 186; pneumonia, 145; bronchitis, 85.

Newark, 230,000. Health Officer Chandler reports for the four weeks ending December 25: Deaths, 271; 79 under five years of age; from diphtheria, 9; consumption, 39; pneumonia, 40; other respiratory diseases, 14. Annual death rate, 15.30.

Hudson County (Jersey City and vicinity), 355,231.—W. W. Varick, M. D., President.

NEW YORK.—Daniel Lewis, M. D., President, New York; B. T. Smelzer, M. D., Secretary, Albany.

The Secretary's bulletin for November reported the number of deaths during the month 8,325, which represents an unusual death-

rate of 15.30 per 1,000 estimated population. This is 400 more deaths than were reported in November, 1896, but is about the average of the last seven years for this month. Compared with the corresponding month of last year the proportion of deaths in early life was smaller and the relative zymotic mortality is smaller, and the same is true regarding the average of past years; less than one-fourth of the deaths occurred under the age of five years, and little more than ten per cent. of the deaths were from zymotic causes. The only one of this latter class of diseases which shows a notable decrease is diphtheria, from which there were for the month 5 deaths per 100,000 population, against 6.5 in last November, and an average of 9 during the last ten years. Diarrhoeal diseases have continued to be excessive during the autumn months, the rural mortality from this cause being materially greater than it was a year ago. The mortality from acute respiratory diseases is that of the average for the month, 1,150 deaths, about 14 per cent. of the total, and 17.5 deaths per 100,000 population.

Compared with the preceding month there were 800 fewer deaths and a saving in the annual death rate of 1.45 per 1,000 population; the number of deaths in early life and from the class of zymotic diseases was less, diarrhoeal diseases having decreased by 250 and diphtheria, which usually increases in November, has a smaller mortality, as also has typhoid fever, while scarlet fever and measles have increased in the maritime district only. The rural mortality from diphtheria is small compared with that of last November, only 36 deaths being reported from non-specified towns. November is uniformly the month of smallest mortality in the year; the average monthly mortality for the preceding ten months of the present year was 9,960, against 8,325 this month, a death rate of 15.30 against 18.30, and a daily mortality of 280, which is the average for November for ten years, against a daily average for the rest of the year of 340. The infant mortality is always the lowest in the year, while the zymotic is relatively higher as a rule than in the early spring months. A case of smallpox from a source unknown, is reported from Deposit.

As to weather conditions the barometer and temperature were below the normal, there was a large proportion of cloudy days, and for the first, since July, an excess of rain, to the amount of 1.70 inches, with westerly winds.

New York City, 2,000,000. Report for November: Deaths, 2,730—879 under five years of age. Death rate, 16.60. Zymotic

diseases per 1,000 from all causes, 118.75; diphtheria, 107; typhoid fever, 28; cerebro-spinal fever, 13; consumption, 369; acute respiratory diseases, 436; diarrhoeal diseases, 62.

The recently reorganized Board of Health under the new charter for the greater city, and new appointments so far as made, are as follows: Commissioners: Nathan Straus, President; William T. Jenkins, M. D., John B. Crosby, M. D. Ex-officio Commissioners: Alva H. Doty, M. D., Health Officer of the Port, and Bernard J. York, President of the Board of Police.

Borough of Manhattan: Thomas C. Taylor, M. D., Assistant Registrar of Records.

Borough of Brooklyn: Robert A. Black, M. D., Assistant Sanitary Superintendent.

Borough of the Bronx: Eugene Monoghan, M. D., Assistant Superintendent; Arthur I. O'Leary, M. D., Assistant Registrar of Records.

Borough of Queens: Obed L. Lusk, M. D., Assistant Sanitary Superintendent.

Borough of Richmond: Geo. C. Hubbard, M. D., Assistant Sanitary Superintendent; J. Walter Wood, M. D., Assistant Registrar of Records.

Dr. John T. Nagle, former Registrar of Vital Statistics, has been appointed Chief of the Bureau of Municipal Statistics.

Brooklyn, 1,100,000. Report for November. Deaths, 1,469; 412 under five years. Death rate, 16.15. From zymotic diseases, per 1,000, from all causes, 102.00; diphtheria, 72; typhoid fever, 18; consumption, 181; acute respiratory diseases, 224; diarrhoeal diseases, 19.

Buffalo, 360,000. Report for November: Deaths, 333; 85 under five years of age. Death rate, 11.1. From diphtheria, 14; acute respiratory diseases, 48; consumption, 28; typhoid fever, 8.

Rochester, 170,000. Report for November: Deaths, 125; 16 under five years. Death rate, 8.8. From consumption, 10; acute respiratory diseases, 19; typhoid fever, 5.

Albany, 100,000. Report for November: Deaths, 155; 38 under five years. Death rate, 18.6. From typhoid fever, 8; diphtheria, 6; consumption, 18; acute lung dieases, 20.

Syracuse, 120,000. Report for November: Deaths, 116; 23 under five years of age. Death rate, 116. From diphtheria, 49; acute respiratory diseases, 12; consumption, 12; typhoid fever, 1.

NORTH CAROLINA.—George G. Thomas, M. D., President, Wilmington; Richard H. Lewis, M. D., Secretary, Raleigh.

The December Bulletin summarizes the mortality for November, from twenty-two towns, with an aggregate population of 118,560—52,371 colored.

Total number of deaths, 152, of which 78 were of colored people and 37 under five years of age. Typhoid fever caused 5 deaths; malarial fever, 4; whooping-cough, 1; consumption, 21; pneumonia, 7; diarrhoeal diseases, 17. Annual death rates—whites, 13.4; colored, 17.9; total, 15.2.

OHIO.—S. P. Wise, M. D., President, Millersburg; C. O. Probst, M. D., Secretary, Columbus.

State Bulletin reports population (70 places), 1,413,672. Cases of infectious diseases reported to the State Board of Health during five weeks ending January 1, 1898: Diphtheria, 332, deaths, 61; scarlatina, 204, deaths, 6; typhoid fever, 217, deaths, 36; whooping-cough, 76, deaths, 5; measles, 1,615, deaths, 15.

Cincinnati, 405,000. J. M. Winthrow, M. D., Health Officer, reports for November: 472 deaths; 138 under five years of age. Annual death rate, 13.98. From consumption, 53; pneumonia, 44; bronchitis, 8; zymotic diseases, 49; diphtheria, 13; typhoid fever, 6.

Cleveland, 350,000. J. L. Hess, M. D., Health Officer, reports for the month of November: Deaths, 360; 118 under five years. From diphtheria, 15; typhoid fever, 9; consumption, 7; tuberculosis, 20; pneumonia, 57; bronchitis, 11. Death rate, 12.34.

PENNSYLVANIA.—Pemberton Dudley, M. D., President, Philadelphia; Benjamin Lee, M. D., Secretary, Philadelphia.

Philadelphia, 1,214,256. Theodore B. Stulb, Health Officer, reports for the four weeks ending December 25: Deaths, 1,639; 450 under five years of age. From diphtheria, 156; typhoid fever, 49; consumption, 17; pneumonia, 199; scarlatina, 9. Annual death rate per 1,000, 17.4.

Dr. Taylor, chief medical inspector of the Board of Health, is reported (Bulletin, January 6), as having said:

"I don't suppose there ever was a time when there were more cases of typhoid fever in the city. Of course, I do not want to say what it is due to, except the general statement that it has developed from what is taken into the system. But we are making investi-

gations, and when they are finished we will be able to speak with more definiteness."

Dr. Taylor's statement is sustained by the fact that in seven wards, chiefly in the northwestern section of the city, there have been not fewer than 421 cases of typhoid fever in the past ninety days.

Pittsburg, 285,000. Report for the four weeks ending December 25: Deaths, 354; 123 under five years of age; typhoid fever, 16; consumption, 15; diphtheria, 8. Death rate, 15.9.

SOUTH CAROLINA.—Charleston, 65,165—white, 28,870; colored, 36,295. H. B. Horlbeck, M. D., Health Officer, reports for four weeks ending December 25: Deaths, 123; 84 colored. Under five years of age, 33. Annual death rate—white, 17.4; colored, 30.0—23.7.

TENNESSEE.—W. J. McMurray, M. D., President, Nashville; J. A. Albright, M. D., Secretary, Somerville.

The board as now composed, and reorganized since the death of Dr. Lindsley, is as follows: Dr. W. J. McMurray, of Nashville, President; Sam. N. Warren, of Spring Hill, Vice-President; Dr. W. J. Miller, of Johnson City; Dr. F. S. Raymond, of Memphis, and John T. Essary, of Nashville, Commissioner of Agriculture. Dr. J. A. Albright, of Somerville, is Secretary; John S. Hamel, of Nashville, Assistant Secretary; Dr. J. W. Scheibler, of Memphis, State Veterinarian; Dr. Ernest B. Sangree, of Nashville, State Bacteriologist.

The board has organized a plan for educating the people of the State on sanitation. From time to time pamphlets will be issued on communicable diseases and other kindred subjects. The first pamphlet issued will be on the subject of smallpox and vaccination; where to procure the purest vaccine virus and the best methods of vaccination.

Another commendable feature of the year's work was the organization of the Tennessee Health Officers' Association. This organization was perfected during the National Conference of State Boards of Health in Nashville during the Centennial. The purpose of this organization is to bring the various health officers of the State into close touch, thereby aiding the work throughout the State. It is the purpose of the board to interest the health officers in the work of sanitation, in order that they may be more active in the performance of their official duties.

Memphis, 64,134—27,561 colored. M. Haase, M. D., Secretary, reports for November, 126 deaths, of which 68 were colored, and 31 under five years of age. Annual death rate—white, 15.9; colored, 30.0; total, 20.1. Yellow fever caused 6 deaths; consumption, 5.

Memphis (Cimater) appears to be thoroughly alive to the necessity of extending her sewerage system commensurate with the city limits. When the fever appeared at the Gulf ports in the summer of 1897, a small corner of the city was unsewered, and this adjoined a very large outlying suburb, which had no sewers or sanitary regulations, and here, and here only, was it possible for the fever to find a foothold. While only seventeen persons died of the fever this year, yet the quarantine regulations and dread of the disease cost this city hundreds of thousands of dollars. We cannot afford to experiment or take chances with such scourges and quarantine regulations. It is not only a question of dollars and cents, but of life and death to our people, and not only to our people, but to nearly the whole of West Tennessee. No pecuniary aid is asked of the State, but permission only under legislative authority, because our people have been taught the stern lesson of self-reliance. The people of Memphis will be found equal to any emergency, financial or otherwise, which may confront them, but unfortunately the city is so tied down by State laws that she finds it impossible to use the means at her disposal.

It hardly admits of question that needful legislative authority will be granted; and it is to be hoped that New Orleans and Mobile will profit by the example.

VERMONT.—Rutland Herald, of December 18th, reports the meeting of the State Sanitary Association in that city, on the day before, at which Col. Geo. E. Waring gave an interesting address on "Proper Disposition of Sewage for the Smaller Towns," in part as follows:

It may surprise some of you to know that what we call sewage consists of 998 parts of pure water, one part of mineral matter and one part of organic matter. All the trouble comes from the latter through the decomposition of only one part in 1,000 the refuse from our houses. The waste from kitchen sinks is as dangerous as the waste from closets. There have been many investigations as to the proper disposition of sewage and the best means of getting rid of the organic matter. The investigations of the Massachusetts State Board of Health at Lawrence have demonstrated that it is

necessary to bring sewage in contact with atmospheric air, as only by oxidation can we get rid of this dangerous organic matter.

Foul sewage passing through a dripping tank so as to be exposed to the air becomes harmless. The danger of this organic matter is a development by which it is converted into solid nitrates which is carried away with the water. When the organic matter is exposed to the air, the action of the bacteria, in conjunction with the water, results in consuming the organic matter. It matters little how this is brought about. The flirting of a pan of dish-water will do it, provided it is not always thrown out on the same spot on the ground. The work of destruction is carried on by a mass of bacteria which can only live in the air.

There is another class of bacteria that cannot live in the air. They are the dangerous kind. This is the process that goes on in a cesspool. It accompanies putrefaction.

Let us suppose that we have a town of 5,000 inhabitants situated on a mill stream. The families use an abundance of water. The cesspools overflow and contaminate the streams and we establish an epidemic. They then see that before they used the water they should have introduced a system of sewers. The towns below feel the bad effect and the matter even gets into the courts.

We in New York are beginning to see that it is safer to purify the sewage. In 1865 they began in London on this problem, but their experiment of utilizing the sewage was a failure. In 1882 sewage farming, however, was made a success in France and Germany.

There are two sorts of purification. By one method all the solid matter that floats with the water is taken up. It is called chemical precipitation. The precipitation is carted off. In the distribution of this sewage it is spread in thin sheets over the land. This is a good method if thoroughly done.

A second method is by intermittent filtration. The operation is to establish large tanks four or five feet deep filled with sand and gravel. The filter beds are usually arranged in sets of three, as it will not do to discharge sewage long in the same place.

In 1894 I established a little plant for pumping sewage in Newport, R. I. I made a series of large tanks, divided by a diaphragm into two parts. In the first two or three tanks were placed broken stone. I pumped the heavy sewage into the first tank. The broken stone was soon coated, but the exposure to the air did the

work. Within five days of exposure our friends the microbes, with the aid of the oxidation, had destroyed all the slug.

This year the owners of a large pleasure park in Philadelphia were served with an injunction against the disposal of sewage then in practice. We took one-eighth of an acre and soon had 100,000 gallons of sewage a day passing through a system of filters and aerators, and the water that escaped was as clear as spring water.

There are always special methods for special cases. Do not do as Rutland does—combine a sewerage and a drainage system. Let them be separate. My advice would be to use the present sewage system for draining and build a new sewerage system.

Besides the subject of Col. Waring's address the session was for the most part taken up with the discussion of diphtheria, typhoid fever, school sanitation, the legal status of health boards. Altogether the session appears to have been a particularly animated and inspiring one—followed by a large accession to the membership.

UTAH.—Salt Lake City, 48,076. W. T. Dalley, M. D., Commissioner, reports for November 55 deaths, of which 10 were under five years of age. Annual death rate per 1,000, 9.42. From zymotic diseases, 7; consumption, 7; typhoid fever, 5.

WASHINGTON.—Seattle, 60,000.—Clarence A. Smith, M. D., Health Officer and Secretary, reports for December 29 deaths. Annual death rate per 1,000, 5.80. Deaths from consumption, 2; pneumonia, 3.

WISCONSIN.—Solon Marks, M. D., President, Milwaukee; U. O. B. Wingate, M. D., Secretary, Milwaukee.

Milwaukee, 275,000. Walter Kempster, M. D., Commissioner of Health, reports for November: Deaths, 274; 96 under five years of age. Annual death rate per 1,000, 11.9. Diphtheria caused 9 deaths; typhoid fever, 2; consumption, 35; pneumonia, 22; other respiratory diseases, 22.

GLASGOW, SCOTLAND.—Twenty-seventh annual report, for the year 1896, by Peter Fyfe, F. R. S. E., Chief Sanitary Inspector. The death rate of the city for 1896 was, by the estimate of this department, 19.9, as against 23.09 for 1895, whilst by the published report of the Registrar-General for Scotland it is given as 20.4 per 1,000, as compared with 23.5 for 1895, and an average rate for the four years previous to 1895 of 22.8. This shows an exceed-

ingly satisfactory reduction, amounting to a saving of 1,680 lives per annum. Total estimated population, outside of institutions 688,963. Total number of cases of infectious diseases recorded, per 1,000 of the population, 24.67; total number of deaths recorded from infectious diseases, per 1,000 of the population, 3.47. The chiefly prevalent infectious diseases were: Cases of measles, 168; scarlet fever, 96; whooping-cough, 60; erysipelas, 40; enteric fever and diphtheria, of each 19.

This year marks a very great reduction in the number of emigrants from the Continent to America via Glasgow—only 2,307 passing through, instead of 6,103 in 1895. The Port Inspector reports that the facilities for third-class passengers to America have been improved, and bedding and mess utensils given free. The steam disinfection of the emigrants' baggage has been discontinued, and it is satisfactory to be able to state that no case of infectious disease was reported among them during the year. The shipping in the harbor was regularly supervised—67 vessels not previously inspected having been visited, and several improvements effected, particularly in the fitting up of satisfactory water-closet accommodation.

BOOK REVIEWS.

A MANUAL OF SANITARY ENGINEERING, by M. Barré, Engineer and Professor at the Polytechnic Institute; with a preface by L. Masson, Inspector of Sanitary Works in Paris. Two volumes, 16mo, 350 pages, and 100 illustrations. First volume, The Healthy City. Second, The Healthy House. 4 fr. Libraire J. B. Baillier et Fils. Paris.

These volumes afford a complete course of instruction, so carefully condensed that it would be impossible to find the same amount of information anywhere else.

Under the title, "A Healthy City," the general principles of urban hygiene are first studied; then the means employed to render the soil and the air healthy. An important chapter on water is followed by a description of the condition of the water of Paris and the utilization of the waste from the sewers, and especially its use in agriculture as a means of purifying it, as at Grenvilliers and Achéras.

Then follow an account of the unhealthful institutions—the cemeteries, crematories; and the first volume closes with a very interesting essay on the supply of water and the means of sanitation employed in the cities of France and other countries. A table showing the sanitary condition of the different countries and the mortality in the principal cities is added.

In the part devoted to the "Healthy House," the best of the systems for securing the health of the home are described; water supply, the best means of filtering and for removing the waste.

The conditions necessary for the "Maison ideale" are followed by the establishment of baths, laundries, heating, lighting, ventilation, and sleeping apartments.

The "Manuel de Gênie sanitaire" of M. Barré will render great service by popularizing correct ideas regarding public and domestic hygiene.

EIGHTH ANNUAL REPORT OF THE NEW YORK STATE COMMISSION IN LUNACY, for the Year Ending September 30, 1896. Pp. 1,347. T. E. McGarr, Secretary. Albany, N. Y.

By recent legislation (1895) all the hospitals in the State for the dependent insane are now under State control. In no other State in the Union does this system fully obtain. Pennsylvania has still over 2,000 in the almshouses; Ohio nearly 1,000; Connecticut and Massachusetts each about 800, while other States generally have failed to make adequate provision for their insane.

Among the many improvements brought about by this system may be mentioned (1) The registration of all examiners in lunacy; (2) Registration of all persons committed to institutions for the insane, both public and private, with data as to condition, civil status, results of treatment, etc.; (3) The adoption of regulations for the removal of patients from their homes or from poorhouses to the hospitals, which require that all public patients on delivery to the State shall be in a condition of bodily cleanliness and clad in new and comfortable clothing throughout; (4) Removal of legal distinction between acute and chronic insanity by designating each State institution for the insane as "hospital" instead of "asylum," and organizing them all upon a curative basis, thus inculcating the hospital idea; (5) Provisions for the clinical teaching of insanity, by admiting physicians and medical students to the wards of the hospitals; (6) A material extension of accommodations for attendants and nurses in detached buildings; (7) An effort to improve the

cooking and serving of food, by the employment of a chef in each State hospital, whose duty it is to oversee the cooking in the various kitchens and instruct the subordinate cooks and trained nurses in the preparation of food; (8) A marked improvement in the methods of bathing, by the introduction in nearly all of the hospitals of rain or spray baths. Many other important improvements, specified in the report, show that the change from county to State control has been fully justified.

The whole number of committed insane, public and private, on September 30th, 1896, was 20,869—832 of which were in private licensed institutions; average daily number of patients under treatment during the year, 19,756; total admissions, 5,615; total deaths, 1,877; recovered, 987; not recovered, 2,029; not insane, 54. The percentage of recoveries was: on number admitted, 17.5; on average daily population, 4.9; on number discharged, including deaths, 19.9; not including deaths, 32.1. The percentage of deaths was: on number admitted, 33.4; on average daily population, 9.5; on number discharged, 37.9.

TRANSACTIONS OF THE CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS, 1897. Vol. IV., pp. 364. Illustrated. W. H. Carmalt, M.D., Secretary. New Haven, Conn.

This volume contains important and interesting papers, with extended discussions, on the following subjects: Lesions on the Retinal Vessels, Retina and Optic Nerve, Associated with Gout, by C. S. Bull, A.M., M.D.; Cataract and its Association with the Gouty and Rheumatic Diatheses, by S. D. Risley, M.D.; Gout and Rheumatism as Factors in the Etiology of Glaucoma, by S. O. Richey, M.D.; The Gouty and Rheumatic Affections of the Vocal Tract, by R. Sattler, M.D.; Gout and Rheumatism in Diseases of the Conjunctiva, Cornea and Sclera, by R. A. Reeve, M.D.; Otology in its relations to General Medicine, by C. J. Blake, M.D.; The Physiology of Internal Secretions, by W. H. Howell, M.D.; Upon Internal Secretions Considered from a Chemico-Physiological Standpoint, by Prof. R. H. Chittenden; The Internal Secretory Activity of Glands in Relations to the Pathological Anatomy of Sundry Morbid Conditions, by J. G. Adams, M.A., M.D.; On Some Clinical Aspects of the "Internal Secretions," by J. J. Putnam, M.D.; Therapeutics of the Internal Secretions, by J. P. Kinnicutt, M.D.; Sporadic Cretinism in America, by W. Osler, M.D.; Congenital Dislocation of the Hip, by E. H. Bradford, M.D.; Acute General Peritonitis, by N. Senn, M.D.; Acute General Peritonitis, by R. Abbe, M.D.; President's Address on Adaptation in Pathological Processes, by W. H. Welch, M.D.

CONTEMPORARY LITERATURE.

MORE ABOUT THE MEDICAL SIGNERS OF THE DECLARATION OF INDEPENDENCE.

Dr. Gihon replies to the Georgia Medical and Surgical Journal's exception to his paper read at the meeting of the American Academy of Medicine, as published under this caption in our January number: ". . . Permit me to say that I made the statement advisedly, inasmuch as, while it is true that five physicians signed the Declaration of Independence, Dr. Rush was the only one of the five who was actively engaged in the practice of his profession at the time, and therefore the only practitioner of medicine as stated. Dr. Joseph M. Toner, of Washington, D. C., deceased, original treasurer of the Rush Monument Fund, and the greatest authority on the illustrious physicians of the Revolution in the United States and donor of the large collection of the biographies and works of Rush in the Congressional Library, was the first to call attention to this fact.

"ALBERT L. GIHON,
"Medical Director U. S. Navy (retired).
"City of New York, 25th November, 1897."

LIFE IN A CHANNEL ISLAND.

The land of Jersey is in the hands of a frugal and industrious people, worthy descendants of the rural population of Normandy and Brittany. Not a square inch of ground that does not produce a potato or a cabbage. Prosperity reigns on all sides. Not one dilapidated house. In this bee-hive of an island everything speaks aloud of cleanliness, comfort and even of riches, to those who can understand that real wealth does not consist in the quantity of things we possess, but in those we can do without, if need be. Jersey is a kitchen garden of about seventy square miles, picturesque, healthy, fertile, strewn with cottages that are wrapped in roses, and when I have told you that the cultivation of the potato alone brings in from twelve to fourteen millions of francs annually, that is to say about three millions of dollars, I shall have no trouble in convincing you that poverty is practically unknown in Jersey. Happy Jersey! Add to this that, with the exception of wine and liqueurs, which pay a light duty, all kinds of merchandise enter

Jersey untaxed; that living is consequently very cheap; that the incometax collector is unknown; that a crowd of tourists visit the island during four months of the year; that activity reigns everywhere, not the feverish activity of the Americans, but the regular, uniform, intelligent activity of the French; that the soil is so fertile that flowers and fruits seem to spring from it as by enchantment; that the landscape is most picturesque and varied; that the climate is delicious; and you will conclude that Jersey is probably the Eldorado of the world, and the Jersey folk, as I said before, the richest and happiest people on the surface of the globe.—From "A Paradise of Good Government," by Max O'Rell, in North American Review for January.

THE BLACK DEATH.

The pestilential disease which prevailed so extensively in Europe during the Middle Ages, and which was known everywhere as the black death, caused an enormous loss of life. This disease is now believed by epidermiologists to be identical with the bubonic plague of the Orient. No doubt, however, other pestilential maladies, and especially typhus, or "spotted fever," were confounded with the prevailing epidemic disease. The last-mentioned disease is sometimes known as "famine fever," on account of its liability to prevail in epidemic form during periods of scarcity of food. Typhus was not recognized by physicians as a distinct disease until about the end of the fifteenth century, and typhoid fever, which prevails as a nendemic disease in all parts of the civilized world, was not differentiated from typhus until the early part of the present century. There is, therefore, considerable confusion as regards the real nature of the disease in many of the epidemics which occurred in Europe during the Middle Ages, and even as late as the last century. But there can be no doubt that bubonic plague was one of the chief causes of mortality. It continued to prevail in various parts of Europe during the sixteenth century, and during two-thirds of the seventeenth; but during the latter part of the seventeenth century it became more and more rare, and after the middle of the eighteenth century its only permanent habitat in Europe appears to have been a limited area in the southeastern portion, from which it occasionally spread northward, without, however, extending much beyond the limits of the Balkan peninsula. During the early part of the present century it still occurred to some extent in this region, where it prevailed as an epidemic for the last

time in 1841.—From "The Etiology and Distribution of Infectious Diseases," by Surgeon-General George M. Sternberg, in Appleton's Popular Science Monthly for January.

PREHISTORIC DENTISTRY.—George Byron Gordon, the explorer, contributes an article on "The Mysterious City of Honduras" to the January Century. The article gives an account of recent discoveries at Copan. Mr. Gordon says:

"No regular burying place has yet been found at Copan, but a number of isolated tombs have been explored. The location of these was strange and unexpected—beneath the pavement of courtyards and under the foundations of houses. They consist of small chambers of very excellent masonry, roofed sometimes by means of the horizontal arch, and sometimes by means of slabs of stone resting on the top of the vertical walls. In these tombs one, and sometimes two, interments had been made. The bodies had been laid at full length upon the floor. The cerements had long since molded away, and the skeletons themselves were in a crumbling condition, and give little knowledge of the physical characteristics of the people; but one fact of surpassing interest came to light concerning their private lives, namely, the custom of adorning the front teeth with gems inlaid in the enamel, and by filling. Although not all of the sets of teeth found have been treated in this way, there are enough to show that the practice was general, at least among the upper classes; for all the tombs opened, from their associations with prominent houses, seem to have belonged to people of rank and fortune. The stone used in the inlaying was a bright green jadeite. A circular cavity about one-sixteenth of an inch in diameter was drilled in the enamel of each of the two front teeth of the upper row, and inlaid with a little disk of jadeite, cut to a perfect fit, and secured by means of a bright-red cement.

NEW YORK'S DECREASING DEATH-RATE.

The supreme test of a nineteenth-century city as a desirable civic home is the safety and protection which it guarantees to human life; in other words, the death-rate is the civic barometer, and as it rises or falls human beings live or die. A low death-rate is usually coincident with a high tax-rate, because an administration which dares to provide the most improved methods in its various departments must pay for them, and in matters touching human life the best is never too high-priced. No one department can ever bring

about a low death-rate, but it will always depend on the intelligent and harmonious working of all the branches of the city's service.

For New York City the death-rate in 1891 was 26.31; 1892, 25.95; 1893, 25.30; 1894, 22.76; 1895, 23.11; 1896, 21.52; 1897 (up to the week ending December 11), 19.62.—From "New York's Civic Assets," by William Howe Tolman, in American Monthly Review of Reviews for January.

The January number of the American Monthly Review of Reviews is one of the best issues in the history of that magazine. From cover to cover it is thoroughly "live," alert, and forceful. The opening editorial department of "The Progress of the World" gives a clear and exhaustive New Year's summary of political conditions in both hemispheres at the threshold of 1898.

WHY MOST IMMIGRANTS LANDED IN NEW YORK.

Ernest Ingersoll writes for January St. Nicholas a paper on the Greater New York entitled "Reasoning Out a Metropolis." Mr. Ingersoll says:

"The merchants of New York sent to the continent of Europe more ships than the merchants of other cities, who traded mainly with Great Britain, so that this city was better known throughout Europe, and her vessels were the handiest for emigrants from France, Germany and Holland. Agents of the New York merchants and of the government who were seeking and encouraging immigration, could show that this port was the most advantageous landing-place for a man who was going on West; and the sea-captains explained that it was the safest and quickest port to make, because the course lay south of the stormy, foggy region north of Cape Cod, and the city was much closer to the open sea than either Philadelphia or Baltimore. At any rate, immigration increased in favor of New York as time went on; and the stream of incoming people swelled until in the decade from 1884 to 1894 it amounted to about a half a million of immigrants a year, 590,666 arriving in 1890 alone, not counting those from Canada and Mexico."

THE PHILADELPHIA MEDICAL JOURNAL, the latest publication in the field of medical literature, is quite up to its prospectus, issued some time ago. Starting out as a thirty-six page weekly, it adds eight pages in the second week, and proposes henceforth to publish forty-four pages every week, unless continued success warrants further enlargements. We congratulate the editors on their good

start and wish them the success which they so well deserve. $3 a year. Box 1573, Philadelphia, Pa.

THE SKELETON SKETCHES of the "1898 Antikamnia Calendar" are a standing admonition to take time by the forelock with Antikamnia if you should happen to be overtaken by the grip or any of its kindred. It is no less potent as an efficient ready remedy than the Calendar is as a true index of the time. The Antikamnia Chemical Company, St. Louis, Mo.

PUBLICATIONS RECEIVED.

Preventive Medicine in the city of New York. H. M. Biggs, M. D., New York.

Alcoholism in Women. Agnes Sparks, M. D., Brooklyn, N. Y.

Address read before State Convention of Superintendents of the Poor. W. P. Letchwork, LL. D.

Antitoxic and Bactericidal Properties of the Serum of Horses Treated with Koch's New Tuberculin. C. Fisch, M. D., St. Louis, Mo.

Observations upon Pulmonary Tuberculosis in Colorado. S. G. Bonney, M. D., Denver, Col.

Discoloration in Canned Lobster. Government Print, Ottawa, Canada.

The Work of the Medical Department on Board U. S. Naval Vessels. C. A. Siegfried, M. D., U. S. N.

Comparative Merits of Resorts in New Mexico, Colorado and Arizona. S. E. Solly, M. D., Detroit, Mich.

Care of Milk on the Farm. R. S. Pearson, B. S. Government Print, Washington.

Ducks and Geese. G. E. Howard. Government Print, Washington.

Public Health Service in the United States. W. Wyman, A. M., M. D., Surgeon-General U. S., M. H. S.

The Clinical Value and Chemical Results of Using Prof. Gaertner's Mother Milk in Children. L. Fischer, M. D., New York.

The Etiology and Therapy of Tuberculosis. H. B. Weaver, M. D., Chicago.

Deficient Excretion from Kidneys not Organically Diseased. L. D. Buckley, M. D., New York.

Eighteen Years of Personal Observation of Tuberculosis in Asheville, N. C. J. H. Williams, A. M., M. D., Asheville, N. C.

A National Health Organization and Other Sanitary Needs of New Orleans. S. E. Chaille, M. D., New Orleans.

Second Annual Report of the Board of Managers of the Second Hospital for the Insane of the State of Maryland, Baltimore, Md.

Pulmonary Tuberculosis. A Report of the Board of Health of the city of New York to the Mayor.

THE INTERNATIONAL MEDICAL ANNUAL, 1898. The ANNUAL for 1898 will contain many special articles of great interest in addition to the regular summaries of the year's work in Medicine and Surgery, 38 editors, each contributing to the department with which he is specially identified. Among the special articles will be found one on "The Chief Pathogenic Bacteria in the Human Subject," with descriptions of their morphology and methods of microscopical examination, by S. G. Shattock, F.R.C.S., the Pathological Curator of the Museum of the Royal College of Surgeons, London, illustrated by a series of ten finely colored plates; two contributions by Drs. Robert Jones, F.R.C.S., and A. H. Tubby, M.S., on "The Obliteration of the Deformity in Pott's Disease," and on "Congenital Dislocation of the Hip," showing the technique in each case; both are freely illustrated, chiefly by reproductions from photographs. The work will be thoroughly illustrated by thirty-six full-page plates, twelve being colored, besides many illustrations, line and half-tone, incorporated in the text. We respectfully ask the continued patronage of the profession, that we may thus still further extend the ANNUAL'S circulation and usefulness. E. B. TREAT & Co., Publishers, 241-243 West Twenty-third Street, New York.

THE SANITARIAN.

MARCH, 1898.

NUMBER 340.

SUGGESTIONS UPON HYGIENE AND DIET FOR THE PULMONARY INVALID.

BY EDWARD J. BERMINGHAM, A. M., M. D.,

Surgeon-in-Chief and Director of the Clinic for Consumptives, New York Throat and Nose Hospital.

The ideal treatment of consumption should be carried out in a sanitarium properly located in regard to climate. This, however, is impracticable even with the majority of well-to-do-patients, who find it inconvenient, and often impossible, to leave business interests and family. With the bread-winner of a dependent family it is well nigh impossible, and for the very poor entirely out of the question, as the consumptive father or mother must remain with the dependent little ones until death claims the victim. Fortunately it is not absolutely necessary. We have been looking to our unattainable ideal so long that we have failed to see and utilize the means of combatting this disease that we have at hand, and which, if conscientiously and persistently carried out, will give results fully equal to, and in many cases surpassing, those obtained by a change of climate and sanatorium treatment.

The great advantage to be derived from sanatorium treatment is the control of the patient's habits, food, exercise, and entire mode of living. If we can control the patient in the city we gain this great advantage, and, in addition, keep him with his family and friends, amidst cheerful surroundings. When the patient knows and appreciates the nature of his disease, his habits can be controlled by any physician who has a thorough knowledge of the disease and the ability to impress and influence the patient.

PREDISPOSING CAUSES.—It may be laid down as a rule without exception that no person who is in the enjoyment of vigorous health, and who observes the laws of diet and hygiene, ever contracts tuberculosis. The vitality must be lowered and the constitution weakened before this dread disease can find an abiding

place. *Consumption is not inherited.* A weak constitution may be inherited, and the fact that consumption existed in parents, grandparents, or collateral relatives, is evidence of the transmission of a lowered vitality; but the germ that produces the disease is never acquired by heredity.

While a poor constitution often exists as a birthright, it far more frequently is the result of either vicious habits or the breaking of nature's laws. Irregular living, improper food, improper clothing, uncleanliness of person, inattention to the hygiene of the skin, neglect of slight ailments, overwork, worry, living or sleeping in dark or badly ventilated rooms, office work, the use of alcohol, neglect of out-door exercise; and, in fact, whatever tends to produce a lowered vitality, must be looked upon as the cause of consumption, rather than the little germ we have heard so much about since 1882.

THE EXCITING CAUSE of consumption is undoubtedly the germ known as the *tubercle bacillus.* Every case of consumption has its origin directly from other cases. It is now positively known that phlegm coughed up by consumptives contains the germs, which, when transmitted to persons of lowered vitality, will produce the disease in them. Many millions of these germs are discharged by one consumptive patient in the course of a single day.

MODES OF INFECTION.—By inhaling the matter coughed up from the lungs of consumptives after it has become dried and powdered—in other words, *converted into dust.* This is apt to occur when the patient spits upon the street or ground. The matter coughed up becomes mixed with dust and is then easily carried into the air, when it is readily inhaled. This habit is therefore not only offensive, but dangerous. Inhalation of dust-laden germs is also apt to occur when an ordinary pocket-handkerchief is used by a consumptive to receive the expectorations. When such a handkerchief is opened the dried matter is likely to be diffused through the air as dust, and may be inhaled by others as well as the patient himself, who is likely to suffer from drawing disease germs into portions of lung previously unaffected. Self-infection may also occur by swallowing the coughed-up matter, which habit is likely to lead, sooner or later, to infection of the bowels with tuberculous disease. The disease is also often conveyed to others by the use of spoons, cups, towels, napkins and other articles of the kind which have not been properly washed after having been used by consumptives. Kissing is another method of communicating the

disease, and is especially to be guarded against in the case of children.

THE PREVENTION OF CONSUMPTION.—From what has just been said concerning the causes of consumption it is obvious that to prevent it we must bear in mind the building up of the general health, and the destruction of the germs of the disease. For the first of these all the hygienic and dietetic rules to be mentioned hereafter when speaking of treatment must be faithfully and persistently carried out. In addition, our efforts must be directed particularly against the germ causing the disease.

The coughed up matter must not be allowed to become dry, and must be destroyed as soon as possible. The consumptive should provide himself at the outset with Dr. Knopf's *pocket spit-cup*,* which is constructed on the principle of the irreversible inkstand. It is made of aluminum, weighs but two ounces, and is about four inches long by one and three-quarter inches in diameter. The cap, with inner funnel attached, may be readily unscrewed, and after emptying the contents into the bowl of the water-closet, the two separate parts should be boiled in a solution of bicarbonate of soda (1 rounded teaspoonful to a pint of water) for fifteen minutes. About a teaspoonful of a solution of carbolic acid, made by adding a teaspoonful of the acid to a pint of water, should be placed in the flask before it is again placed in the pocket. This spit-cup may be concealed in the loose folds of the handkerchief, so that when in use it will appear as if the patient were expectorating into the handkerchief.

Dr. Knopf's Pocket Spit-Cup.

"Rooms that have been occupied by consumptives should be thoroughly cleaned, scrubbed, white-

*Manufactured by the Kny-Sherer Co., 17 Park Place, New York.

washed, painted or papered before they are again occupied. Carpets, rugs, bedding, etc., from rooms which have been occupied by consumptives should be disinfected. The Health Department should be notified, when they will be sent for, disinfected, and returned to the owner free of charge, or, if he so desires, they will be destroyed."* If the previous occupant of the room never allowed the furniture, hangings or carpets to become contaminated with the expectorations there would be little need for this precaution, but people ordinarily of cleanly personal habits sometimes show a surprising amount of ignorance or carelessness in this respect.

Great care should be taken by a consumptive that his hands, face and clothing, also the bedding, do not become soiled with the matter coughed up. If the hands and face become soiled they should at once be washed with hot water and soap. The linen can only be disinfected by boiling for at least fifteen minutes, which should always be done with handkerchiefs and towels used by consumptives.

Consumptive patients should sleep alone, and mothers who are consumptive should not suckle their children.

There is no danger of infection from the breath of a consumptive. The danger only lies in the matter coughed up.

The Health Department of the City of New York recommend that the following suggestions be enacted into law. It is the duty of every good citizen to support the department in the crusade it is now waging against consumption:

1. The ultimate inclusion, when public opinion is ripe for that step, of consumption in the list of notifiable diseases.

2. Public and official announcement of the fact that, in the event of a person having died of consumption, the rooms occupied by him will be disinfected by the sanitary authorities free of charge. The facilities for disinfection should extend to any dwelling which has been vacated by a consumptive person, and should be enforced in the case of hotels and lodgings at health resorts frequented by sufferers from chest diseases.

3. The passing of an act making it illegal to let any house or room in which any person, within two months, has suffered from consumption, without having had it properly disinfected.

4. To make it a punishable offense, by fine or imprisonment, for any person letting a house or room wilfully to conceal or deny that there has been consumption in the house.

*From circular of Health Department, City of New York.

5. To call the attention of shipping agents to the fact that there is danger to a healthy person in occupying the same cabin with a consumptive, especially on long voyages, and when, from the inclemency of the weather, the passengers are not much on deck.

6. To make it compulsory for a consumptive person taking a long voyage by sea to notify the nature of his complaint before starting.

7. To call the attention of railway companies, on lines connected with well-known health resorts for consumptives, to the necessity for having the sleeping carriages carefully cleansed with some disinfecting solution, and, above all, thoroughly aired.

8. The removal of hospitals for consumptives in large cities to some convenient and open suburb.

9. The exercise of greater care in the inspection of carcasses intended for food, and the compulsory rejection of those indicating tubercular disease.

10. The rejection, as an article of fluid food, of the milk of tubercular cows.

11. The inspection of herds by paid officials, with the view of destroying tubercular animals.

12. The prevention of overcrowding among animals intended for consumption as food.

13. The prevention of overcrowding among people by regulating the amount of cubic space allotted to each person in common lodging-houses, work-shops, etc.

14. Back-to-back houses should be condemned, and the height of houses in cities should be in proportion to the width of the streets.

15. Blind alleys should be opened out, and the custom of building houses at right angles to the length of the streets should be forbidden.

16. Dusty occupations should be strictly regulated, so as to minimize the danger to those who are compelled to follow them.

17. Convents and other religious communities should be periodically inspected by some independent authorities, with a view of ascertaining the general condition of the health of the inmates and suggesting such sanitary and other measures as may seem necessary.

THE TREATMENT AND CURE OF CONSUMPTION.—"Consumption can often be cured if it is recognized early and proper means are taken for its treatment." * * * "In a majority of cases it is

not a fatal disease." * * * "A person suffering from consumption may often not only do his usual work without giving the disease to others, but may also get well, if the matter coughed up is only properly destroyed."

The above sentences are taken from reports of the State and City Boards of Health, and reflect the opinion of the profession regarding the results of treatment.

THE PERCENTAGE OF CASES BENEFITTED by appropriate treatment varies according to the development of the disease when treatment begins and the nature of the treatment adopted, but statistics show an improvement varying between twenty-eight and ninety-five per cent. The average percentage of cases benefitted is sixty-five, which means that the patient's life was prolonged, sometimes for years, and that his sufferings were relieved.

THE PERCENTAGE OF CURES is, of course, much smaller. When the disease is recognized in the first stage and appropriate treatment is instituted at once, we may hope to effect an arrest of the disease or a complete cure in sixty-two cases out of every hundred. Where, however, the disease has not been recognized early, and appropriate treatment has been neglected until the second or third stage has been reached, the proportion of cases is only fifteen per hundred.

THE DURATION OF TREATMENT varies between three months and three years, according to the nature and requirements of the case.

THE TREATMENT must in all cases be directed by the attending physician, who will determine from day to day the variations in exercise, diet and medicines. What is said hereafter is meant to aid the physician by placing in the hands of the patient an explanation in detail of the different rules to be adopted to restore him to health—rules that he must become perfectly familiar with in order to properly second the efforts of his physician. But in no case must he adopt or practise any of them without his physician's advice, as in certain stages of the disease, or even in certain phases that might arise from day to day, they might be contra-indicated, and if carried out would be injurious instead of beneficial.

LIVE AS MUCH AS POSSIBLE IN THE OPEN AIR. This rule admits of no exception in any stage of the disease. It is the most important of all in the treatment of a consumption, and should be followed even when the disease is so advanced that the patient's

strength is exhausted. He should then be wrapped in overcoat, cap and rugs, and remain for hours in the sun before an open window. When out of doors the patient should keep in the sun as much as possible, protected, when necessary, from wind and rain. In the early stages of the disease the patient should go out in all kinds of weather, whether snowy or rainy, and even in extreme cold. Cold air is richer in oxygen and more invigorating than warm air. In stormy weather the patient should still take his daily outing by clothing himself properly and taking a long ride on the platform of a street car. If it is very windy he may walk with the wind and return on the platform of a street car shielded from the wind, or vice versa.

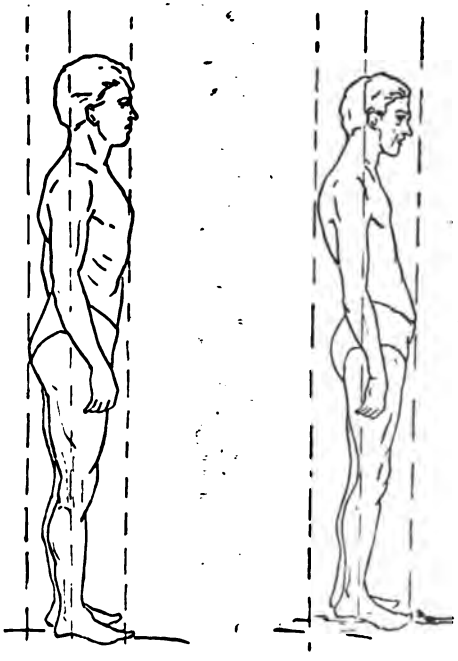
OUT-DOOR EXERCISE should be taken according to the patient's strength, but he should always stop short of the point of fatigue. The best form of exercise is walking. In the early stages the patient should begin by walking a mile in the forenoon and another in the afternoon. This distance should be gradually increased until ten miles per day can be covered without fatigue. Walking in this way should not be indulged in occasionally. To get the full benefit of such exercise it must be followed conscientiously as a *daily* routine. As improvement occurs the patient may and should engage in regulated bicycle riding *in a correct position*, and in horseback exercise if he can afford it; and such out-door sports as golf, tennis, rowing, etc., are beneficial not only because of the physical effects, but for the mental exhilaration in addition.

BREATHE DEEPLY AND SLOWLY, and always *through the nose*. The air, in passing through the nose, is filtered, warmed and moistened, and is thus deprived of all means of irritation when it reaches the throat and lungs. If, however, the air is inhaled through the mouth, it is obvious that there being no warming apparatus and imperfect means for filtering and moistening, the air reaches the throat and lungs cold, dry and unfiltered, irritating the membrane lining the air passages, and resulting, sooner or later, in producing or augmenting chronic throat and lung affections. If the nasal cavities are normal in size the patient should be able to breathe through the nose at all times and under all normal conditions. If he is not able to do this, whatever obstruction exists in the nose should be removed by appropriate treatment.

RESPIRATORY EXERCISES are very necessary to develop the muscles of the chest, back and shoulders, and to promote the deep

breathing which is so essential as a preventive and curative agent in consumption. The exercises should always be taken in a room with open windows and after removing all clothing that may restrict the necessary motions. They should not be taken when the patient is fatigued, nor for an hour after a meal; and should be discontinued as soon as the patient begins to feel tired. Again, patients should not adopt or practise these exercises unless by the advice of the attending physician, who will prescribe the variety, frequency and duration of the exercise.

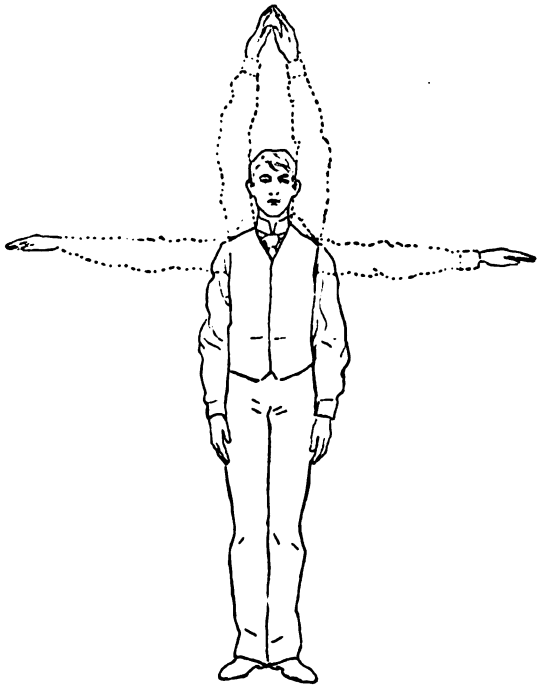
Before practising any exercise it is necessary to assume the correct position, as shown in the accompanying cut, with shoulders held back and down, chest expanded, abdomen slightly retracted and head erect. This position should be maintained whether sitting, standing or walking. At first it will be found difficult, but by correcting the faulty position whenever it is discovered the patient will gradually become accustomed to the correct position.



Correct Position. Faulty Position.

The exercises taught at the New York Throat and Nose Hospital are those devised by Dr. S. A. Knopf, one of the physicians

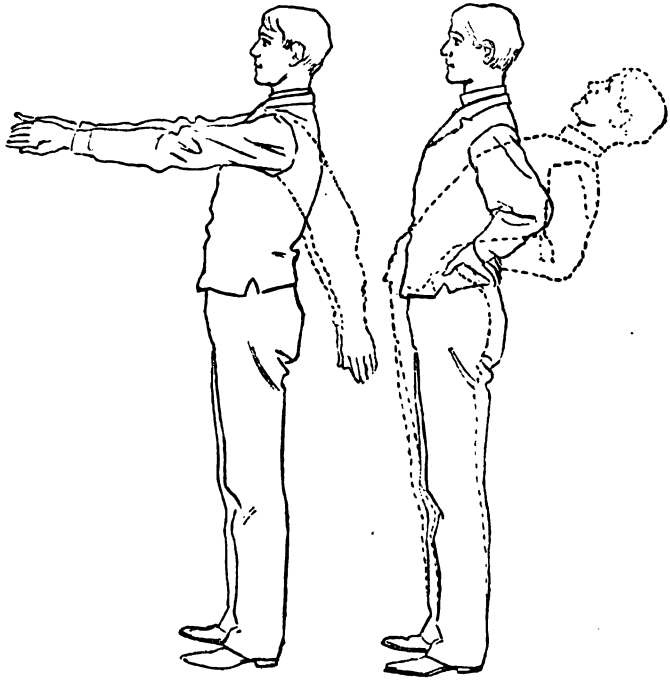
to the Lung Department. They are here described in his own words:



First and second respiratory exercises.

"The patient is taught to stand properly and to breathe always through the nose. He takes a deep inspiration slowly while raising the arms from the sides to a horizontal position, holds the breath for a moment, and lowers the arms during the expiration, which should be somewhat more rapid. The second exercise is like the first, except that the upward movement of the arms is continued until the hands meet above the head. In the third exercise the patient stretches his arms out as in the position of swimming, the dorsal surfaces of the hands touching each other. During the inspiration the arms are moved outward and finally meet behind the back. They are brought forward again during the expiration. Each respiratory act should be followed immediately by a secondary forced expiratory effort. This is for the purpose of expelling as much of the supplemental air as possible, and may

be effectually aided by supinating the arms and pressing the thorax with them."



Third respiratory exercise.

Respiratory exercise for persons with the habit of stooping.

"To consumptives who have the habit of stooping I teach an additional exercise as follows: The patient makes his best effort to stand straight; he places his hands on his hips with the thumbs toward the front, and then bends backward slowly as far as he can during the act of inspiration. He remains in this position a few seconds while holding his breath, and rises again somewhat more rapidly during the expiration."

When the patient has fully recovered his health a McFadden Exerciser placed in his room, and used for five minutes morning and evening, will go far towards maintaining him in a healthy condition.

WEAR WOOLEN UNDERCLOTHING suitable to the season. Be sure that the underclothing is *all wool*, with no admixture whatever of silk or cotton. Quality is to be considered before quantity, so it is better to have a thin all-wool garment than one two

or three times as heavy and only part wool. The garments introduced by the Dr. Jaeger's Sanitary Woolen System Co. are ideal. The patient should be clothed in wool from the neck down, and should not, under any circumstances, wear so-called *chest protectors* or oil silk jackets. The best chest protector is a well made cork-soled shoe.

WEAR WOOLEN NIGHT CLOTHING and sleep between woolen sheets or blankets. Do not wear the same underclothing day and night. When the day clothing is removed it should be well shaken and hung up in a well ventilated room until it is again put on. The night clothing should receive the same treatment during the day. In very warm weather a single garment of gauze wool, covering the entire body and limbs (combination suit), or thin wool pajamas, may be worn, and the bed covering dispensed with. When the feet are not covered by the bedclothing, or if they are cold, woolen socks or "sleeping shoes" should be worn.

HAVE AT LEAST EIGHT HOURS SLEEP; do not sleep in a heated room at any time; do not sleep or room with another; and keep one window at least always open in the sleeping apartment.

VENTILATION of the rooms occupied by a consumptive is a most important matter. Stress has been laid upon the necessity of being as much as possible in the open air. The breathing of pure, fresh air is of more importance than any other thing for the prevention and cure of chronic lung affections. In warm weather the windows should be widely open at all hours, day and night. Do not be afraid of *night air*. If it was harmful the Almighty would not compel us to breathe it on an average of twelve hours out of every twenty-four. In most cases the admission of plenty of fresh air into the sleeping room is sufficient to ensure a restful night, free from cough. In cold weather the best way to ventilate the room is to *raise* the lower sash six inches, and fit a board closely into the open space thereby created. The fresh air will thus enter the room between the lower and upper sashes, will have an upward current, and there will be no direct air blowing into the room. Of course no curtains or shades should obstruct any part of the window, and whenever possible the sun should be allowed to pour into the room. Patients should avoid draughts, dusty or damp places and foul air localities. The last mentioned would include theatres, concert and banquet halls, schools, churches, and crowded places of every sort.

BATHING is very beneficial if indulged in properly. Tub baths should be avoided. Sponging the entire surface of the body quickly with cold or tepid water, followed by brisk rubbing with a rough towel until the surface is in a glow, is particularly desirable. If a cold or tepid shower bath can be taken in the same way it will be still better. If the patient is strong enough he should do the rubbing himself. The best time to take the bath is just after rising in the morning. The patient should not feel chilly after the bath. The reaction, or return of circulation in the skin, evidenced by redness, should be prompt and pronounced to be of benefit.

DIET.—Next to fresh air, the diet plays the most important part in the prevention and cure of consumption. It should be highly nutritious and very digestible.

All stimulants should be avoided unless specially ordered by the attending physician, and then only in the exact quantities and at the times specified by him.

THE QUANTITY OF FOOD is important. Consumption is a wasting disease, and the waste must be more than repaired to get improvement. The patient *must* take, every twenty-four hours, at least two quarts of milk, three eggs, three-quarters of a pound of beef or mutton, and twelve ounces of bread made from the entire wheat.* This daily quantity of these foods should be taken as long as they do not produce distaste or disturbances of the stomach or bowels, in which event the suggestions for deviation should come from the physician. In addition to the above, which the patient *must* take, he *may* select whatever suits his fancy from the following:

ARTICLES OF DIET PERMITTED.—*Soups*—Clam, Oyster, Turtle, Tomato, Mutton or Chicken Broth. Particularly the jelly and gravy made from meat.

Fish—All kinds of *fresh* fish and oysters, either broiled, boiled, stewed or baked.

Meats, Bread, Etc.—Broiled or Roasted Mutton or Beef, *rare*; Steaks, Hamburger Steak, Chops, Poultry, Game, Sweetbreads, Brain, Stewed Tripe, Gelatine, Neufchatel or Cream Cheese, Clabber, Gluten Bread, Whole Wheat Bread.

Eggs—Raw, Poached or Boiled. Raw, beaten in milk.

Vegetables—Celery, Cauliflower, Watercress, Greens, Peas, Spinach, String Beans, Tomatoes.

*Use Franklin Mills Entire Wheat Flour, and make the bread exactly the same as with white flour.

Fruits and Nuts—Bananas, Pears, Peaches, Plums, Apricots, Grapes, Nectarines, Oranges, Figs, Dates, Baked Apples—*all without sugar.* English Walnuts, Almonds, Filberts, Pecans, Roasted or Boiled Chestnuts.

Drinks—Water, Hot Water, Carbonated Waters, Milk, Boiled Milk, with or without Vichy; Cream, Kumyss, Matzoon, Peptonized Milk, Cocoa or Tea, *without sugar.*

ARTICLES TO BE AVOIDED.—*All fried food*; Veal, Pork, Sugar, Pies, Pastry, Puddings, Salt or Smoked Meat or Fish, Macaroni, Spaghetti, Potatoes, Turnips, Carrots, Parsnips, Beets, Arrowroot, Sago, Corn Starch, Tapioca, Hominy, Rice, Wheat Bread, Rye Bread, Iced Drinks, Ice Cream, Water Ice.

If an article of diet cannot be found in either of the above lists, the patient should not decide upon its classification, but should ask his physician to do so.

The following rules should also be observed:

Eat slowly and chew the food thoroughly.

Do not take liquids during or shortly after meals.

Milk should be taken in sips, and at least ten minutes occupied in drinking a tumblerful.

In cases of faulty digestion, take food at regular intervals, frequently, and in small quantities.

THE DAILY LIFE OF A CONSUMPTIVE should be regulated somewhat as follows:

7:00 A. M.—Glass of hot milk in bed.

7:15 A. M.—Rise; cold sponge and rub off.

7:45 A. M.—Breakfast, to consist of one glass of milk, one cup of cocoa made with milk, two mutton chops, two eggs, four ounces of whole wheat bread, and fruit.

9:00 A. M.—Out-door exercise.

10:30 A. M.—Glass of milk.

12:30 P. M.—Lunch, to consist of roast beef and vegetables, four ounces of whole wheat bread, and one glass of milk.

1:30 P. M.—Out-door exercise.

4:00 P. M.—Two glasses of milk, an egg to be beaten in one of them.

6:30 P. M.—Dinner, to consist of cold or hot meat, two glasses of milk, four ounces of whole wheat bread, and fruit.

9:00 P. M.—Glass of milk.

9:30 P. M.—Retire.

Breathing exercises as frequently as possible.

34 West 45th Street, New York.

VITALITY OF PATHOGENIC GERMS IN WATER AND OTHER MEDIA.*

By B. Meade Bolton, M. D., of Princeton, N. J.

One of the most striking features of the bacteria is variability. These organisms are subject to variability of shape; to variability in all their vital manifestations, such as fermentation, production of disease and production of pigment; to variability in the capacity of living in various media. In short, they possess no characteristic that is not subject to variation. The anthrax bacillus, ordinarily a short, sharply cut rod forming spores or resistant bodies under favorable conditions, and capable of producing a virulent, infectious disease in man and animals, sometimes becomes so distorted in shape as to be unrecognizable under the microscope. It may be made to lose its power of forming spores and of producing disease. The diphtheria bacillus is sometimes a fine, uniformly stained rod; at others it appears as a large, irregularly nodular rod. Sometimes both ends are swollen and apparently distorted, sometimes one end alone. Sometimes the rod stains irregularly; the protoplasm is collected into clumps and granules in the cell membrane. The bacillus prodigiosus frequently resembles a coccus, and at other times appears as a distinct rod, or even a short thread. This organism, which ordinarily forms a deeply red mass on the nutriment medium, frequently loses its power of producing pigment. Percy Franklin has pointed out that with certain bacteria it is possible to force them to produce certain products of growth by gradually introducing certain substances into the nutrient medium. I have obtained some results in a set of experiments not yet published, which seem to show that the bacteria may be accustomed gradually to the presence of substances in the nutrient medium that would be sure to inhibit the growth or destroy the bacteria. There is even some evidence that the bacteria may even be finally stimulated to increased growth by the gradual in-

*Read at the New Jersey State Sanitary Convention at its recent meeting in Lakewood.

troduction of substances classed as germicides. But it is useless to multiply examples. The variability of the bacteria under the influence of external conditions is well recognized, and the sensibility of these to environment has been abundantly shown.

In all general considerations of the bacteria this property of variability must always be borne in mind. It must never be forgotten that the bacteria are living cells, and that they are not chemical compounds. All cells have more or less individuality, and all agglomerations of cells have variable characteristics. This point can be illustrated by any series of experiments with disinfectants. The use of a certain amount of the disinfectant may destroy many of the organisms, and yet leave many more unaffected. The same amount of the disinfectant may kill more of the organisms in one culture than in another.

These points in regard to the variability of the bacteria have been mentioned for the purpose of showing that it should not be wondered at if we find that the bacteria vary in their vitality in water. And this is just what we do find.

The typhoid fever bacillus, for example, has been found to live for thirty days in water into which it was introduced intentionally, and yet it is frequently found to die out much sooner than this in water. In a number of experiments that I made formerly to test the vitality of various pathogenic bacteria when intentionally introduced into water, the discrepancy in the results was a surprise and disappointment. Sometimes the bacteria diminished and disappeared much more quickly than at others. In view of what we now know of the variability of the bacteria this want of uniformity is not to be wondered at. When pathogenic bacteria are introduced into water there are many factors that determine how long they are likely to remain. The number introduced, possibly the special adaptability to water of the bacilli that are introduced, the temperature of the water, the number of bacteria of other kinds already present with which those that are introduced will have to compete. The amount of organic matter that could furnish a supply of nutrition might be supposed to be a factor also, but in experiments referred to below I did not find that this can play any important part. But I have always found that pathogenic bacteria introduced into water disappear sooner or later. In my experience they do not multiply when introduced into water. They did not multiply even in very foul water from a shallow well, and, moreover, they failed to multiply even when this water was freed

from other bacteria, that is, sterilized. I was able to obtain a multiplication of the bacteria in water only after I had added a certain amount of peptonized beef broth. It was necessary to add an amount of beef broth estimated to contain sixty-seven millegrams of organic matter to a liter of water before any growth could be obtained of the typhoid fever bacillus, and the equivalent of 400 millegrams of organic matter before any multiplication of the cholera organism could be obtained.

This amount of organic matter is never found in the most contaminated water, and not only is this amount of organic matter not found, but the kind of organic matter used in the experiments is never found in ordinary contaminated water. The kind of organic matter found ordinarily would be much less suited for the typhoid and cholera bacilli than the carefully prepared peptonized broth used in the experiments, and I think it may be safely stated that where water becomes contaminated with pathogenic bacteria that these will rapidly disappear, owing to lack of proper nutrition and to the conflict with the other bacteria, the saprophytes, found always in contaminated water.

There are bacteria that multiply in water, even in distilled water, as I pointed out some years ago, and these bacteria, the aquatic bacteria, quickly make the pathogenic bacteria disappear. The pathogenic bacteria, for the most part, are very choice, as we know, in their food. We have to prepare the media for their cultivation with great care, and they stand no sort of chance in competition with the hardy saprophytes found in water. The pathogenic bacteria have to be given conditions closely resembling those of the animal body to grow and multiply. The saprophytes, on the contrary, flourish at a lower temperature and with much less elaborate food. This is the reason why the examination of water shipped to the laboratory is of no use. In a few hours after it is caught the bacterial flora of water change and some of the forms abundant at the start are much less in number, while other forms, relatively few at the start, increase sometimes enormously. It is an interesting experiment to examine water freshly caught, and then let it stand and examine it at intervals. I have found that about two forms usually survive after a few days, and that these increase very rapidly. One is a bacillus, fluorescent, non liquefucient and a micrococcus to which I gave the name micrococcus aqualilis. The bacteria in water shipped from a distance do not represent the bacteria that were present at the time the water was caught, and if

there were pathogenic bacteria at the start these are specially likely to disappear.

For this reason it is never worth while to attempt an analysis of water shipped for examination. The results are misleading. I have often made such examinations in the past, and always with negative results. The bacteriological examination of water can be of value in detecting pathogenic bacteria only when the cultures are prepared immediately after the water is caught. The danger from contaminated water arises from the use of the water very shortly after contamination. Of course, if there is a source of continuous contamination then the water is dangerous at all times and the finding of the organisms in the water is comparatively easy, as was the case of the finding of the cholera bacilli in the water during the last cholera epidemic in Hamburg and Altona. But under ordinary circumstances the detection, even under the most favorable conditions, is extremely difficult. In the case of typhoid fever bacilli in water the matter is peculiarly difficult and time-consuming.

One difficulty, the chief one, is the want of definite characteristics of typhoid fever bacilli themselves. The matter of contamination of water with the typhoid fever bacillus is of more importance to us in this latitude than the contamination of any other kind, and it would be of the greatest value to be able easily to recognize this organism. I would not be understood as undervaluing the importance of bacteriological examination of water. I wish merely to show that satisfactory results are not obtainable without the expenditure of a great amount of work and with many precautions as to the collection of samples and immediately making cultures. With proper precautions the bacteriological examination of water is of value even if pathogenic bacteria are not found. I very much question the utility of one single examination. It can happen that water from a well or other source may be free from contamination at one time and contaminated at another.

It has been very often shown that the chief, if not the only danger, from contaminated water arises from surface contamination. If water filters through the soil it is purified. Now, during a dry season there is little danger of contamination from the surface drainage. Only in case there is a crack or crevice leading from a privy vault or other source of contamination is there any great danger of infection. Esmarch has shown that pathogenic bacteria

rapidly die out in the soil, within one or two days, so that it would be a difficult matter really to make the bacteria pass from a privy vault to a well through the soil in which there are no crevices. Flügge is of the opinion that infection of water is more apt to take place indirectly than directly. That is, that vessels used for drinking water are apt to become contaminated and thus infect the water. Of course Flügge does not deny, any more than any one else, that what the Germans call "massen infection" takes place from drinking water. In the case of typhoid fever I have always thought that danger of spreading the disease arises quite as much from indirect contact of food and vessels for food and drink with the typhoid excreta as from contaminated water.

To sum up then: It is probable that pathogenic bacteria usually have but a brief life in water; that under ordinary circumstances they find neither the conditions for multiplication and growth nor for prolonged life; consequently, as is borne out by experience, the danger of the spread of disease in this way is transitory unless the source of supply is subject to continuous contamination from a channel leading from a privy vault. Water is probably infected frequently after it is drawn and carried into the house for use, just as food probably is.

HERBERT B. BALDWIN, Chemist of the Newark Board of Health, in opening the discussion upon the paper, said:

We may search for a long while in the literature of the subject and not get such definite information. It is well to know what conditions favor or destroy the growth of bacteria in open supplies.

It is important in the care of surface water to know definitely what conditions affect the vitality of pathogenic germs, as it is supplies of this character that usually cause the most serious epidemics. It is also in such areas usually impossible to find the germ on account of dilution or to the fact of the absence when looked for. In the case of ground water the action of the soil on the vitality of the bacteria is most important.

A paper read in London two or three years ago discussed the subject with relation to the cholera spirillum and typhoid bacillus. The experiments were made in sterilized soils of white sand, yellow and garden earth and peat, under various conditions of moisture. Without going into details, it was found that in the case of the cholera germ in dry soil it did not live more than two or three days; in ordinary dry soil about three days; in moist white sand, seven days; in moist yellow sand and garden earth, thirty-three days,

and, under certain conditions of moisture and evaporation, the germs were alive at the end of 174 days—the life-supporting power of white sand being least.

In peat, death always occurred in about 24 hours, notwithstanding the amount of moisture. In the case of the typhoid bacillus, in ordinary dry soil the bacilli were found up to the ninth day in the white sand; to the eighteenth in the yellow, and to the fourteenth in garden earth. In moist white sand the germs were alive on the twenty-third day, and in yellow sand and garden earth on the forty-second day. Peat in the case of the germ caused death in twenty-four hours.

Now, then, in view of the destructive action of peat, it seems reasonable to suppose that peaty waters, so plentiful in New Jersey, would excite an unfavorable action on the growth of bacteria contained therein. It is very possible that the experiments have been in this direction, but I am not aware of them.

Miquel, in his "Anti-infection of Waters," says when samples of various waters, pure and impure, are maintained at a constant temperature of 68 degrees Fahrenheit, they vary differently in the matter of the increase of their bacterial contents. With pure water the increase is rapid and temporary, while with impure water it is slow and lasting.

Dr. Bolton states that bacteria rapidly decrease in number when intentionally introduced into water. This is due, I believe, to the presence of toxines produced either by these or other bacteria.

These toxines are very volatile, and the following interesting experiments described by Professor Mason furnish in a striking manner the deadly effect of the toxines on bacteria. Some water slowly distilled in a special apparatus at a temperature between 86 degrees and 95 degrees Fahrenheit was inoculated with the germs from 1650 liters of air. The number of bacteria found in the water were, immediately, 75 per cent.; six days, 7 per cent.; sixteen days, 1.5 per cent.; twenty-seven days, 1.5 per cent.

Note the difference between this and the next experiment. River water sterilized in the ordinary manner was inoculated with germs from twenty liters of air. The number of bacteria per cubic centimeter, immediately, 6.5 per cent; seven days, 750,000 per cent.; ten days, 900,000 per cent.; thirty-one days, 16,750,000 per cent.; ninety days, 62,500 per cent.; 273 days, 48,000 per cent.

I cannot resist the opportunity to say a few words relative to the bacteriological versus the chemical examination of water. Dr.

Dunham, in a paper read before the American Chemical Society last spring, stated the case thusly: "The chief aim of an examination of water with reference to its fitness for drinking is to learn whether it contains, or is likely in the future to contain, poisonous substances, or the contagion of disease. The detection of mineral poison falls within the domain of chemistry. The actual isolation of specific bacteria of disease can only be done by bacteriological methods." This is perfectly true so far as it goes, but he has only stated part of the case of the chemist, and the smaller part at that.

Leaving out of the question the possible extent to which bacteriological examination may be pushed, the practical and usual examination consists of counting the number of bacteria per cubic centimeter, and searching for the typhoid bacillus and the bacillus coli communis. The latter, as a constant quantity in fæces, indicates sewage pollution. The typhoid bacillus is rarely found in drinking water, although almost positively known to be present. This leaves the colon bacillus as the main evidence of the bacteriologist of sewage contamination, and as he does not find the pathogenic germ he cannot do more than class the water as dangerous.

The chemist has very little to do with the mineral poisons in water before referred to, and finds them less often perhaps than the typhoid bacillus is found, but in the majority of cases can detect sewage pollution more certainly than the coli bacillus will indicate it, and he says the water is dangerous.

It should be remembered that the bacteriologist looks for something that is in suspension, while the chemist determines substances in solution. The bacillus may, in the case of well water, be temporarily filtered, while the soluble matters are not affected. On the other hand, the polluting matter may be so largely diluted that chemical tests will fail to reveal it, and yet there may be enough coli bacillus to give a positive indication.

Let me give illustrations of these conditions. Only a few days since I examined some water from a well situated within a few feet of a cesspool and found it grossly polluted. A bacteriological examination failed to reveal any coli bacillus, and pronounced the water O. K. In this case the bacilli had simply been filtered out by the soil. But who knows what day they may come through?

The city water supply of Newark furnishes an example of the other condition. Any one who has been over the watershed cannot doubt that many coli bacilli get into the water daily, and have

done so for years; yet, chemically, the water is of excellent quality. Is this the fault of the bacteriologist? Certainly not. There simply did not happen to be any of the germs in the few drops he examined.

I do not wish to be understood as trying in the slightest degree to belittle the work of the bacteriologist. On the contrary, his aid is of the highest advantage; but it will be readily seen by the thoughtful that there may be many cases where either system would give positive results to the exclusion of the other, and that in all cases where possible both methods should be employed, as each supplements the other.

ADEQUATE VENTILATION IN MINES—THE AMOUNT OF AIR NEEDED FOR MEN, HORSES AND LIGHTS, UNDER VARIOUS CONDITIONS.*

By E. W. Thirkell.

(*a*) Respiration of Men.—The respirations of healthy persons from 25 to 30 years of age average 16 per minute. The act of inspiration occupies longer than that of respiration in the ratio of 12 to 10 in adult males. The quantity of air which the lungs take in at each inspiration is on an average 34 cubic inches when the person is at rest. So that (34 cubic inches × 16, or) 544 cubic inches of air are required per minute. Dr. J. S. Haldane, in his report, states that "100 cubic feet of air would suffice to keep a man alive for 10 hours." This volume is only at the rate of 288 cubic inches per minute, so that the air would be breathed twice over (544÷288). Prof. F. Clowes states that "the same air might be breathed in again and again three or four times before it became inconvenient or uncomfortable to breathe."

In breathing, about 4 per cent. of carbon dioxide is given off from the lungs, consequently a person would exhale (4 per cent. of 544 cubic inches, or) 21.76 cubic inches per minute. Ordinary air contains 0.04 per cent. of carbon dioxide, so that a man vitiates it to the extent of (21.76 cubic inches ÷ 0.04, or) 544 cubic inches;

*Paper read at a recent meeting of the Midland (England) Institute of Mining, Civil and Mechanical Engineers. From *American Gas Light Journal.*

consequently 544 cubic inches of fresh air will be required to purify that vitiated, in addition to the 544 cubic inches required for breathing, or (544 × 544, or) 1,088 cubic inches per minute for ordinary breathing; but the atmosphere is also made unhealthy by the poisonous addition of effete or refuse material which is being constantly exhaled from the lungs and skin of men and horses—especially when hard at work. The impurity of the air varies according to the space per individual, and it is not desirable to have many men and horses working close together. Each adult requires about 1,000 cubic feet of space for healthy breathing.

In order to arrive at an estimate of the extra quantity of air required when the men and horses are working, the following figures have been adopted, in the absence of more reliable information:

If the air inspired in a lying position be taken as unity, then the air inspired in a sitting position may be taken at 1.18; when walking 1 mile an hour, at 1.9; 3 miles an hour, at 3.22; and 6 miles an hour, at 7. Walking at the rate of 1 mile an hour is equal to 17½ foot tons of energy, and at 4 miles an hour, to 70 foot tons; a man's ordinary work is equal to 300 foot tons, and very hard work to 403 foot tons. So that lying down being taken as unity, an ordinary day's work would be equal to about 32, and as a person at rest requires 1,088 cubic inches of fresh air per minute, he would require (1,088 cubic inches × 32, or) 34,816 cubic inches, or about 20 cubic feet per minute when working.

(*b*) Respiration of Horses.—An average horse respires 12 times a minute (when at rest), and about 250 cubic inches will be expired at each respiration, of which 4.7 per cent. will be carbon dioxide. A horse at rest, therefore, requires (12 × 250 cubic inches, or) 3,000 cubic inches per minute for breathing, and of this 4.7 per cent. is carbon dioxide, or 141 cubic inches is converted into carbon dioxide, and it will require (141 cubic inches ÷ 0.04, or) 3.525 cubic inches for breathing, and 3,525 cubic inches in addition to purify that breathed, making 6,525 cubic inches of air per minute altogether.

Mine horses and ponies are generally much smaller than those employed on the surface, and for the purpose of this paper it will be desirable to deduct 25 per cent. from the above results; leaving 4,894 inches of air required for a mine horse when at rest and (4,894 cubic inches × 2, or) 156,608 cubic inches, or say 90 cubic feet of air per minute when working.

(*c*) COMBUSTION OF LAMPS.—In an experiment, a safety lamp, inclosed in an air-tight vessel of 489 cubic inches capacity, used the air in 3 minutes, or at the rate of 163 cubic inches per minute. One-fifth of the air would be used up in burning, so that (163 cubic inches ÷ 5, or) 32.6 cubic inches of air would be used per minute. Then (163 + 32.6, or) 195.6 cubic inches would be required per minute, of which 3 per cent. would be carbon dioxide, or (195.6 cubic inches × 3 per cent., or) 5,868 cubic inches, and to restore the air thus vitiated to its normal state would require (5.868 cubic inches ÷ 0.04, or) 146.7 cubic inches; and (195.6 + 146.7, or) 342.3 cubic inches of fresh air per minute. The air vitiated, however, depends upon the quality of oil used, as some oils (benzolene) require a smaller volume of air to produce perfect combustion than others (rape oil).

It has thus been shown that a man at work requires 20 cubic feet, a horse at work 90 cubic feet, and a lamp 342.3 cubic inches (1-5 cubic foot) of fresh air per minute, for ordinary purposes.

Gases.—It is necessary now to consider what quantity of air, in addition to the above, is required in respect of the gases met with in the mine.

Table I.

Percentage of Carbon Dioxide Present.	Effects on Man.	Effects on Lights.
3.5	Breathing deeper.....	Still burns.
6.0	Marked panting.....	Still burns.
10.0	Severe distress.....	Still burns.
15.0	Partial loss of consciousness.....	Extinguished.
25.0	Final death.....	Extinguished.

Table II.

Percentage of Oxygen Present.	Percentage of Nitrogen Present	Effects on Man.	Effects on Lights.
17.3	82.7	Nil.....	Extinguished.
12.0	88.0	Breathing slightly deeper	Extinguished.
9.0	91.0	Breathing deeper and more frequent. Face bluish..	Extinguished.
5.0	95.0	Loss of consciousness and final death.....	Extinguished.
0.0	100.0	Death, with convulsions..	Extinguished.

Table III.

Pct. of Black-damp (containing 87 pct. of Nitrogen and 13 pct. of Carbon Dioxide) Present.	Effects on Man.	Effects on Lights.
16	Nil.....	Extinguished.
28	Breathing slightly deeper.....	Extinguished.
50	Severe panting.....	Extinguished.
66	Life endangered.....	Extinguished.

Table IV.

Percentage of Firedamp Present.	Effects on Man.	Effects on Lights.
1.0	Nil.....	First indication of a cap.
2.0	Nil.....	Well-formed cap.
5.5	Nil.....	Lamp fires and goes out.
45.0	Breathing slightly deeper	Lamp fires and goes out.
70.0	Life endangered.	

Sulphureted Hydrogen.—It occasionally happens that firedamp is mixed with traces of sulphureted hydrogen. This is easily recognized by the smell of rotten eggs. Sulphureted hydrogen is excessively poisonous; as little as 0.1 per cent. will cause rapid loss of consciousness and death. Smarting of the eyes and catching of the breath are signs of imminent danger from this gas.

This gas is generated by the putrefaction of animal matters; also by the de-oxidation of sulphates in presence of decaying organic matter; it is a product of the explosion of gunpowder, and of the decomposition of iron pyrites; it also is found in old workings with standing water.

Table V.

Pct. of Carbon Monoxide Present.	Effects on Man.	Effects on Lights.
0.05	After ½ hour or more, slight giddiness on exertion	—
0.10	After ½ hour or more, inability to walk.....	—
0.20	After ½ hour or more, loss of consciousness, and perhaps final death.....	—
1.00	After a few minutes, loss of consciousness and final death.....	Cap.

Afterdamp.—After explosion, the hot afterdamp would consist of:

Nitrogen	70.71	71.55
Argon	0.85	
Carbonic acid		9.50
Aqueous vapor		18.95
		100.00

Table VI.

Pct. of Afterdamp (containing 3 pct. of Carbon Monoxide) Present.	Effects on Man.	Effects on Lights.
2.0	After ½ hour or more, slight giddiness on exertion	Nil.
3.5	Inability to walk	Nil.
7.0	Loss of consciousness	Nil.
10.0	Death	Burns rather dimly.
16.0	Death	Extinguished.

Firedamp.—What quantity or percentage is inflammable and will render the use of naked lights dangerous?

Prof. F. Clowes states that, when air contains less than 5 per cent. of firedamp, it cannot be fired by a flame unless it is also mixed with a large amount of fine suspended coal dust. Messrs. Mallard and Le Chatelier give 5.6 and 6 per cent., whilst the English Commissioners' Report states that "our experiments with lamps in gas mixtures have led us to the conclusion that when little more than 4 per cent. of marsh gas is present, flame may be transmitted under circumstances which occur in a mine."

The Prussian Firedamp Commissioners made some experiments in 1887 with a naked light let down into a chamber filled with gas in varying proportions, and it was not until the mixture contained 6 per cent. of gas that the "phenomenon produced the impression of an explosion," and then comparatively feeble. They state "it would appear, therefore, that mixtures containing from 4 per cent. to 6 per cent. of marsh gas are by no means so dangerous as is generally supposed."

The French Firedamp Commission say that "with 6⅔ per cent., a feeble explosion occurred repeatedly."

It is important to remember that "firedamp," so called, is not always composed of precisely the same constituent parts; this

variation of composition will account for the fact that sometimes it is more readily ignited in a safety lamp than at other times.

The presence of very fine coal dust in the air appears to completely alter the state of things. But here again opinions differ.

According to the English Commission explosions were produced by dust suspended in air traveling at a velocity of 600 feet per minute, when firedamp was present in proportions ranging from 2 to 2.75 per cent.; in currents of low velocity the same result was produced with a sensitive dust in the presence of 1.5 per cent.

According to the French Commission, with mixtures of air, coal dust and firedamp, nothing occurred when the mixture only contained 4 per cent. of firedamp; when this proportion was exceeded, an unsteady flame existed for some seconds, very feeble, bluish or yellowish. With 6⅔ per cent. a feeble explosion occurred repeatedly.

According to the Prussian Commission, in ordinary atmospheric air all varieties of coal dust are found harmless in the presence of naked lights. Even when this air contains as much as 4 per cent. of methane, this harmless character is maintained. If the air contains 4.5 per cent. or more, certain varieties of coal dust will induce an explosion in the presence of naked lights. At a proportion of only 5 per cent. of methane this explosion is incomparably more violent than is the case without coal dust of 6 per cent. methane.

According to Mr. W. Galloway, under suitable conditions a mixture of air with fine coal dust and containing only 1 per cent. of firedamp can be fired and give rise to an explosion.

Dr. J. S. Haldane says:

"It is well known that coal dust has a marked power of absorbing gases, so that any gas or vapor found in small proportions may easily be taken up by the suspended dust.

"It seems not unlikely * * * that such measures as the removal of excess of dust and the moderate or partial watering so elaborately carried out in many mines may increase, rather than diminish, the chances of a dust explosion."

Ordinary safety lamps will not indicate the presence of firedamp unless it amounts to 2½ or 3 per cent. of the mixture, but this depends to a very great extent upon the lamp and the illuminant used. With an oil flame, gas can only be detected when the proportion is about 3 per cent.; but with the benzoline flame, the caps will indicate percentages as low as 1.5 per cent.

The English Commission, already referred to, recommend the bonneted class of safety lamp. They recommend that all safety lamps should be provided with a shut-off appliance for the extinction of the flame produced by both the illuminants and by ignited gas within the lamp; also that in the case of bonneted lamps there should be two vertical slits at opposite sides to enable the miner to see that the gauze is in the lamp.

The lamp fixings should also be so arranged that it is impossible to put a lamp together unless every part is in its proper place.

Having got a lamp of the approved type, such lamp should be tested with varying mixtures of gas and air, in order to see what height of cap, on a given sized flame, would be produced with the illuminant in use at the colliery. In this case a deputy could report the amount of gas, according to a scale, which could be fitted to the lamp, in the same way he reports the water gauge.

Every lamp should be tested regularly in an explosive gas mixture before it is given out to the workmen.

The gases produced by the detonation of 7 ounces of gunpowder measure 1.92 cubic feet, and have the following composition:

Carbon dioxide.....	49.9	0.95808
Carbon monoxide.....	14.1	0.27072
Nitrogen.....	33.3	0.63936
Sulphureted hydrogen.....	2.7	0.05184

To become harmless, the carbon dioxide must be reduced to 1 per cent., the carbon monoxide to 0.02 per cent., the nitrogen increased to 77.95 per cent., and the sulphureted hydrogen reduced to 0.02 per cent.

Consequently (2,572 cubic feet of air ÷ 1.92, or) 1,339 times the volume of the gases given off by the explosion of the gunpowder will be required. According to the composition given by Mr. Orsman at a recent lecture, his figures being somewhat different from the above, 1,347 times the volume of the gases given off by the explosion of the gunpowder will be required. In a place, where a shot was fired with 188 cubic feet of air passing per minute, it took 12 minutes to make it clear, and 2,256 cubic feet of air were required, as against 2,572 given above.

In the report on "An Investigation as to whether the Fumes," etc. (from which the composition of the gases given off by powder is taken), it is stated, if 7 ounces of powder were fired in 540 cubic feet of air the proportion of carbon monoxide would not be danger-

ous, but they give 0.05 of carbon monoxide, and according to Dr. J. S. Haldane this amount is not safe. It is further stated, "if an interval of 5 minutes be allowed to elapse after the firing of the shot before the hewer commences to work, no ill effects will be experienced from the fumes." This statement shows that (540 cubic feet × 5, or) 2,700 cubic feet are required to purify a working place after a shot is fired.

Of course it will be at once seen that if a place has a large quantity of air passing, work may be more speedily resumed after firing the shot, but in any case, after the shot is fired, about 2,500 cubic feet of fresh air are required to make the air in the place as pure as the air was before the shot was fired, and this air sometimes contains 0.11 per cent. of carbon dioxide. It therefore appears that at least 500 cubic feet of air per minute are required for every shot fired to dilute the gases given off by the explosive, depending upon the purity of the air in the first instance.

The Austrian Commission refer to the danger of gas coming out of the goaf by reason of barometrical depression, which should be guarded against. All unused roads communicating with the goaf should be closed on the intake and dip side by good stoppings or several feet of stowing, but on the return and rise side they should be left open and a return airway kept to carry off the gas. In long wall working, complete stowage of the goaf is enjoined.

In a case known to the writer, it was found necessary to drive a gas level to drain off the gas, in the same manner as a water level drains off water. The particular district was exceedingly gaseous, numerous outbursts of gas had occurred, and various methods were adopted to cope with it; in driving straight work the gas came off in blowers, which could be felt by the hand at a distance of some 30 inches from the face. The working faces had to be stopped at intervals for days in order to allow the gas to drain off. When the coal was being worked the outbursts still went on, and bore holes were put down in the gate roads, which showed signs of having heaved up (owing to a pressure exerted from beneath). The ventilation had, therefore, to be specially arranged to prevent the gas from coming in contact with the workmen.

It appears, from a perusal of a foreign commissioner's reports, that far more care is taken on the Continent to prevent loss of air through stoppings, overcasts, etc., than is the case in this country. The writer ventures to say that of the total ventilating current in many collieries, particularly the older ones, as much as 10 per cent. is lost in the main roads, engine planes, etc., through de-

fective stoppings (about 500 cubic feet per minute per 1,000 feet of airway); 15 per cent. is lost on the levels and branch roads, through stoppings, doors and overcasts; and 15 per cent. is lost between the levels and the working face, or 40 per cent. in all. Consequently, in a mine with a total intake air current of 150,000 cubic feet per minute, only 60 per cent. of this quantity, or 90,000 cubic feet, will actually pass the working face. Members will find it interesting to test these figures by actual measurements in collieries under their charge.

The writer advises that more care should be taken in making the stoppings air-tight—in the first instance, the slits or bolt holes should be driven as small in every way as possible, and the pillars between the intake and return airways made as thick as possible, a good wall should be built and well plastered, and the slit stowed tight up. In the proposed Coal Mines Act of 1897 it is suggested that overcasts should be made in solid rock. More care should also be taken in erecting doors; walls should be built at each side, at right angles to the door frame, so as to prevent leakages of air through breaks in the coal.

In order to ascertain the amount of gas given off in a particular district, the ventilating current should be so reduced (when the pit is idle) as to just show a given cap on a safety lamp, with a given current; say the current was reduced to 5,000 cubic feet per minute, and the lamp indicated 5 per cent. of gas; then there would be 250 cubic feet of gas per minute produced, and to reduce this down to 2 per cent., at which it would be invisible on an ordinary safety lamp, would require (50 times 250 cubic feet, or) 12,500 cubic feet of air per minute.

General Conclusions.—The volume of air required for workmen, etc., is as follows:

	Cubic Feet per Minute.
Each person requires ordinarily, when at work.....	20
Do. when in a working place giving off ½ per cent. of gas.....	40
Do. with ¾ per ct. of gas, to reduce it down to ½ per ct.	55
Do. " 1 " " " "	80
Do. " 1 1-5 " " " "	107
Do. " 1¼ " " " "	115
Do. " 1½ " " " "	160
Do. horse requires.....	90
Do. safety lamp requires.....	0 1-5

FŒTAL MURDER.

THE PROGRESSING DECREASE OF THE RATE OF INCREASE OF AMERICAN POPULATION.*

By Dr. H. R. Storer, Newport, R. I.

Pres. Med. Staff Newport Hospital; V.-P. Am. Med. Ass'n, 1868; Pres. Assoc. Am. Med. Editors, 1871; V.-P. Gyn. Sect. Int. Med. Congress, 1887; Fellow (non-res.) N. Y. Acad. of Med.

A recent failure to obtain conviction in a trial for criminal abortion in Rhode Island, the case having been thought a clear one, is said to have carried such discouragement to several of the members of this Society that they are unwilling to have even the general subject referred to. Upon the other hand, if we acknowledge the frequency of the crime, and of this there can be no question, one would suppose that the time was peculiarly appropriate for attempting to ascertain the real cause of what may have been not an exceptional instance of failure of justice, and, if possible, to find its remedy. Towards this a brief summary of the medical anti-abortion movement, comprised within the past half century, may perhaps be of aid.

Forty years ago, on December 14, 1858, in a paper read at Boston, before the American Academy of Arts and Sciences, upon the "Decrease of the Rate of Increase of Population," then, as now, progressing in this country, I attempted to explain a problem that was already disturbing political economists. The decrease of the rate of increase had been noticed and commented upon, but its complete explanation unreached. I was led to the true answer to the question, not as a medical jurist, philanthropist or social reformer, but solely as a gynecologist. Being struck by the prevalence of certain forms of pelvic disease after abortion, and by the frequency with which patients in easy circumstances acknowledged to me in such cases that there had been an enforced short-

*Abstract of paper on Criminal Abortion: Its Prevalence, Its Prevention, and Its Relation to the Medical Examiner—Based on the "Summary of the Vital Statistics of the New England States for the Year 1892," by the six secretaries of the New England State Boards of Health. Read before the Rhode Island Medico-Legal Society at Newport, R. I., August 12, 1897. From the *Atlantic Medical Weekly*, Oct. 2, 1897.

ening of pregnancy—if it had been merely the destitute I should not have been so much impressed—I induced medical friends to institute similar inquiries, and they found that almost invariably when the same leading interrogatories were put, identical replies were elicited. I had soon a body of evidence that justified me in suggesting that criminal abortion, and this alone, afforded the missing link, the complete explanation of what had previously been inexplicable, in relation to the decrease of the rate of increase of our population. So extensive and authoritative were its statistics that there could be no longer doubt, and its conclusions were at once accepted by scientists in this country and Europe.

Previously to the date mentioned, 1858, there had been for a few years a revival of sentiment regarding the inherent heinousness of induced abortion. From the earliest days of medicine it had been reprobated, but a technical cloudiness of idea, or of expression, had crept into medical language and that of the law. Quickening, so-called, a sensation that by no means occurs with every pregnant woman, had come to be explained as meaning "with quick child" rather than "quick with child." In other words, many believed that before the fourth month, or thereabouts, the fœtus was but a portion of its mother and not endowed with independent life—an opinion that in these days of each person being their own judge in questions of morality and religion, had become the prevalent one.

In 1857 I had brought the question of the prevalence of criminal abortion, as evidenced in gynecological practice, to the attention of the Suffolk District Medical Society, of Boston. I was there peremptorily challenged by the older men, who considered the investigation both injudicious and improper. Several of these, who were afterwards my critics at the Academy, were determined to prevent the threatened scandal, as they considered it. The Suffolk District Society at once led the movement by appointing a committee consisting of the late Drs. Henry I. Bowditch, Calvin Ellis and myself, upon whose report the matter was carried to the State Society, to the end that through its aid the Massachusetts statutes might be made more correct, more intelligible, and more efficient. There had been thirty-two trials in that State for abortion from 1849 to 1857, and not a single conviction. The State Society thereupon appointed still another committee to report to its councillors, whose action was to be final. Of this committee I was the youngest member. It took advantage of my temporary

absence from the State, and without notifying me or in any way recognizing my existence, to report that "the laws of the Commonwealth are already sufficiently stringent provided that they are executed," and the councillors were but too glad to decide accordingly. Thus did the State Society of Massachusetts in 1858, by its refusal to assist in rendering convictions possible, become so far directly accountable for the increase of the crime. In 1857, at its meeting at Nashville, the subject was presented to the American Medical Association, which I had joined in 1856; a committee was appointed, and its report was made at the meeting at Louisville in the ensuing year. This report was accepted, and the resolutions appended were unanimously adopted (Trans. Am. Med. Assoc., xii., p .75). The report pointed out that there were especially three causes of the general demoralization as regards childbearing. First, a widespread popular ignorance of the true character of the crime; second, that the profession themselves are frequently supposed careless of fœtal life; and third, the grave defects of our laws, both common and statute, regarding the independent and actual existence of the child before birth as a living being. The Association formally presented a memorial to the Legislative Assembly of every State in the Union with the prayer that its laws upon abortion might be revised, and as formally requested the zealous concert of the various State Medical Societies in procuring the action indicated.

Subsequently, the Association awarded its gold medal for an essay upon "The Physical Evils of Forced Abortions," and it was published in its Transactions for 1865. In the hope that if these evils were more frequently known, and their gravity appreciated, much might be done towards the suppression of the crime, the Association authorized, by special vote, the republication of this essay for general circulation, and it thus reached to the extent of thousands of copies the women of the country, physicians and clergymen, both Protestant and Catholic, vieing with each other in its distribution among their patients and parishioners. Its title, by sanction of the Association, was "Why Not? A Book for Every Woman."* It was found, as the Association had antici-

*In view of the fact that where wives were themselves opposed to abortion, their husbands often strongly favored it, and that at the time of many marriages it was soberly agreed between the contracting parties that no children should result, a companion essay was prepared, directed to the same end as the former, and this was entitled, "Is It I? A Book for Every Man."

In 1868, in conjunction with the late F. F. Heard, of the Boston Bar, there was published "Criminal Abortion: Its Nature, Its Evidence, and Its Law" (Little, Brown & Co., Boston), as an aid to its prosecution in the courts.

pated, that where religion and morality had failed, the fear of resulting physical lesions exerted a wonderful deterrent influence, and hundreds of women acknowledged that they were thus induced to permit their pregnacy to accomplish its full period.

You are all familiar with what has since been done during the past twenty-five years, by yourselves and almost every other high-minded physician, in personal attempts to stay the progress of the crime. Much has been written upon the subject, from various standpoints, but fœtal murder still prevails, a dreadful monster that wounded at one point, evinces but fresh strength at others. The decrease of the rate of increase still goes on. It is now estimated that were there to be no accessions from without, the descendants of the original settlers of New England would entirely disappear within an easily calculated period.

But, you will ask, do the most recent statistics sustain these grave assumptions? The following tables I take from "A Summary of the Vital Statistics of the New England States for 1892," compiled under the direction of the secretaries of the State Boards of Health of the six New England States, and published by them in Boston and London.

I. THE NEW ENGLAND LIVING BIRTH RATES AS COMPARED WITH FOREIGN.

In 1892, though the marriage rate in New England and its several States was slightly greater per thousand of population than in any of the fourteen European countries quoted in the Summary, their living birth rate was as follows:

Hungary, 40.3; Italy, 36.3; Austria, 36.2; German Empire, 35.7; Holland, 32; Scotland, 30.7; England and Wales, 30.5.

New England, 24.9; Massachusetts, 27.8; Connecticut, 24.5+; Rhode Island, 24.5--; Maine, 20.7; Vermont, 19.7; New Hampshire, 19.1.

In 1850 the birth rate in Massachusetts was 28.2 per thousand of population. In 1855, 29. During the twenty years, 1871-1890, it sank to 25.7. In 1891 there was an increase to 27.4, and in 1892 to 27.8, but even with these figures it is much below what it was when I discussed the question in 1858.

A wide difference appears above. Has the mental culture of New England produced such general nervous exhaustion as to emasculate its men and to physically unsex its women? Or is it

that, procreative instinct remaining the same, as shown by the many and early marriages, it is the maternal instinct that has been annihilated?

II. EXCESS OF LIVING BIRTH RATE OVER GENERAL DEATH RATE; 1892.

Scotland, 12.2; Norway, 11.9; German Empire, 11.6; England and Wales, 11.5; Holland, 11; Italy, 10.1; Denmark, 10.1.

New England, 5; Massachusetts, 7.2; Connecticut, 4.9; Rhode Island, 4.2; Maine, 2.3; Vermont, 1.8.

During the twenty years, 1871-90, in Connecticut it had been 6.5; in Rhode Island, 5.7, and in Vermont, 5.1, so that in these States the diminution since is extremely marked. In France, where the birth rate has fallen to 22 per thousand, which is larger than those of Maine, Vermont and New Hampshire for 1892, it is now less than the death rate, and the condition is viewed with alarm by the whole civilized world.

How long can our own communities endure the present drain, and can it be explained save as I have done?

III. ILLEGITIMATE LIVING BIRTHS PER ONE THOUSAND LIVING BIRTHS; 1892.

Austria, 143; Bavaria, 132; Saxony, 127; Sweden, 101; Denmark, 101; German Empire, 89; Scotland, 84; Norway, 82; Belgium, 77; France, 74; Italy, 73; England and Wales, 48; Switzerland, 47; Holland, 30; Russia, 28; Ireland, 25. (Bertillon.)

Massachusetts, 15; Rhode Island, 10.7; Connecticut, 10.3; Vermont, 10.2.

IV. NEW ENGLAND AS COMPARED WITH FOREIGN MARRIAGE RATES; 1892.

The comparative marriage rate might be thought to have some bearing upon the general question. Though slightly larger in New England than in many foreign countries, the difference is not very marked. The general marriage rate in New England for the twenty years, 1871-90, was: In Rhode Island, 18.7 per thousand; in New Hampshire, 18.6; in Massachusetts, 18.1; in

Connecticut, 16; and in Vermont, 15.6. In Austria, 16.3; German Empire, 16.4; England and Wales, 15.6; and in Italy the same.

1892: Hungary, 18.4; German Empire, 15.9; Austria, 15.6; England and Wales, 15.4. New England, 18.5; New Hampshire, 21.3; Rhode Island, 19.3; Massachusetts, 19; Vermont, 17.5; Maine, 17.3; Connecticut, 17.

Regarding the above, there can be no doubt that the registration is correct. Granting that ordinary morality among the unmarried is greater with us than in the foreign countries named, do not the tables that have been given show, in the light of almost daily newspaper reports, that where unmarried women in New England do become pregnant, a much larger proportion destroy their children in the early months?

V. THE MARRIAGE AND BIRTH RATES COMPARED; 1892.

Comparing the last figures with the decrease of the birth rate, there can be but a single deduction.

Marriage Rate—Hungary, 18.4; German Empire, 15.9; Austria, 15.6; England and Wales, 15.4.

Birth Rate—Hungary, 40.3; German Empire, 35.7; Austria, 36.2; England and Wales, 30.5.

Marriage Rate—New England, 18.5; Massachusetts, 19; Connecticut, 17; Rhode Island, 19.3; Maine, 17.3; Vermont, 17.5; New Hampshire, 21.3.

Birth Rate—New England, 24.9; Massachusetts, 27.8; Connecticut, 24.5+; Rhode Island, 24.5--; Maine, 20.7; Vermont, 19.7; New Hampshire, 19.1.

From this it may fairly be asked if our married women are more careful of fœtal life than are the unmarried.

VI. EARLY MARRIAGES IN NEW ENGLAND AS COMPARED WITH GREAT BRITAIN; 1892.

In England and Wales, according to Sir Brydges Henniker, the Registrar General, the mean age at which their women marry (as in 1895) is slightly over twenty-six years. In 1892, 18.8 per cent. of the women married in New England were under twenty years of age. In New Hampshire there were 27.3, and in Maine 27.6

per cent. This fact, with the usual disinclination of the very young to settle down quietly to the normal cares of married life, should also be taken into consideration.

VII. LIVING BIRTH DEFICIENCY IN NEW ENGLAND; 1892.

The registration officers of New England, in the publication quoted, state that the living birth rate in a community that is "thriving" should be not less than twenty-seven per thousand, which is much below the average in the foreign countries that I have quoted. There was from this low standard a deficit in 1892 in Maine of 4,000 births and over; in New Hampshire, of 3,000; in Vermont, of 1,500; in Rhode Island, of nearly 1,000; and in Connecticut, of 2,000; or of nearly 12,000 in the five States. The registrars recognize in a footnote this great deficit, and suggest that "in Maine and New Hampshire, in which registration has been operative for a shorter time than it has in the other States, the registration of births is considerably defective." They do not, however, say this of Vermont, Rhode Island and Connecticut, in which three States there was a deficit of between four and five thousand. Is it not quite certain that the deficit must have been in great measure from a far different cause than mere imperfect registration?

VIII. STILL BIRTHS AT TERM IN NEW ENGLAND PER THOUSAND LIVING BIRTHS; 1892.

New England, 35.9; New Hampshire, 54.1; Rhode Island, 41.7; Connecticut, 40.2; Vermont, 36.1; Massachusetts, 34.8; Maine, 19.6.

Granting all that has been suggested by the registrars to deficiency in the registration of living births, it is evident that the same must be allowed in the case of still births, the reported number of which is far too great. During the half century since the introduction of anæsthesia in child-bed, the general disuse of craniotomy, and the less delay in waiting for nature to relieve itself, still births should now be more exceptional.

IX. BIRTHS TO NATIVE AND FOREIGN PARENTS IN NEW ENGLAND; 1892.

The following sentence from the same authorities who have been quoted has its bearing: "Among native parents the first-

lings constituted 31.2 per cent. of the whole number of births, and among foreign parents they were 22.4 per cent. of the whole. The ratio of children who were the fifth, sixth and upwards among foreign parents was much greater than it was among natives." I long ago showed in my paper to the American Academy that this difference "is to be explained by the watchful protection exercised by the Catholic Church over fœtal life, and that there can be no question that the dogma on which this rests, the sanctity of infant baptism, has saved to the world millions of human lives."

Since the paper was read, it has been stated to me by a physician that, in his experience, Catholic women have proved equally guilty. I cannot believe that this can be so, save in his exceptional instance. Were it true, however, it would furnish the most cogent *a fortiori* evidence that the moment had come for renewed and earnest action by the physicians of America. H. R. S.

PRESERVATION OF EGGS.

(Consular Report.)

The Berliner "Markthallenzeitung" reports about experiments made for the purpose of securing the most rational method of preserving eggs. This being a topic of general interest, I beg to give hereafter an extract of the results obtained, as described in the said journal.

Twenty methods were selected for these experiments. In the first days of July, four hundred fresh eggs were prepared according to these methods (twenty eggs for each method), to be opened for use at the end of the month of February.

Of course, a most essential point for the success of preservation is that only really fresh eggs be employed. As the most infallible means of ascertaining the age of the eggs the experimentist designated the specific weight of same. With fresh eggs, it is from 1.0784 to 1.0942. If the eggs are put into a solution of 120 grams (4.23 ounces) of common salt in 1 liter (1.0567 quarts) of water, the specific weight of which solution is 1.073, all the eggs that swim on this liquid weigh less, and consequently are not fresh. Only those eggs that sink should be used for preservation.

When, after eight months of preservation, the eggs were opened for use, the twenty different methods employed gave the most heterogeneous results:

(1) Eggs put for preservation in salt water were all bad (not rotten, but uneatable, the salt having penetrated into the eggs).

(2) Eggs wrapped in paper, 80 per cent. bad.

(3) Eggs preserved in a solution of salicylic acid and glycerin, 80 per cent. bad.

(4) Eggs rubbed with salt, 70 per cent. bad.

(5) Eggs preserved in bran, 70 per cent. bad.

(6) Eggs provided with a cover of paraffin, 70 per cent. bad.

(7) Eggs varnished with a solution of glycerin and salicylic acid, 70 per cent. bad.

(8) Eggs put in boiling water for twelve to fifteen seconds, 50 per cent. bad.

(9) Eggs treated with a solution of alum, 50 per cent. bad.

(10) Eggs put in a solution of salicylic acid, 50 per cent. bad.

(11) Eggs varnished with water glass (Wasserglas), 40 per cent. bad.

(12) Eggs varnished with collodion, 40 per cent. bad.

(13) Eggs covered with lac, 40 per cent. bad.

(14) Eggs varnished with sward, 20 per cent. bad.

(15) Eggs preserved in ashes of wood, 20 per cent. bad.

(16) Eggs treated with boric acid and water glass, 20 per cent. bad.

(17) Eggs treated with manganate of potassa, 20 per cent. bad.

(18) Eggs varnished with vaseline, all good.

(19) Eggs preserved in lime water, all good.

(20) Eggs preserved in a solution of water glass, all good.

The last three methods are consequently to be considered the best ones, and especially the preservation in a solution of water glass, as varnishing the eggs with vaseline takes too much time, and the treatment with lime water sometimes communicates to the eggs a disagreeable odor and taste.

There is, however, one drawback with eggs preserved in a solution of water glass, viz., that the shell easily bursts in boiling water; this may be avoided by cautiously piercing the shell with a strong needle.

J. H. THIERIOT,
Commercial Agent.

Freiburg, July 16, 1897.

PATHOLOGY OF A HEALTH RESORT.

By C. E. Ide, M. D., Buffalo, N. Y.

Preventive medicine includes within its ever-broadening scope the study of climatotherapy. Change of residence often brings about good results in the prevention and treatment of disease which can be obtained in no other manner. Yet health resorts, so-called, do not always prove to be unmixed blessings. The selection of a region for a summer's outing, for instance, requires the exercise of considerable judgment; and when the change is sought for the benefit of one out of health, that rare discrimination and judgment should be brought into play which we believe it our duty to exercise in applying other treatment. Not all regions are suitable for all people, and patients are often sent to places which are ill suited to their physical condition and calculated to aggravate rather than improve the ailments which they seek to benefit; or else, the proper region having been selected, they are not fully informed as to the mode of life—dress, diet, rest, etc.—which they must follow amid the changed surroundings. A suitable region having been decided upon, some thought should be expended upon the environment and the means necessary to bring about a reasonably rapid acclimatization. The sooner it is understood that there are regions which must not be reached and explored and enjoyed by people in all states of physical vigor and health, the better it will be. The doctor's province lies in teaching, and if he is to have charge of the health of families he should be consulted with regard to change of residence as well as other matters; and, on the other hand, he should be prepared to give good advice with regard to it.

At this time I wish to write more particularly of a summer's experience in the Adirondacks, "Nature's Pleasure-ground and Sanatorium," to call attention to some conditions which seemed peculiar to a residence there, and to suggest means for their avoidance.

Health resorts prove to be anything but such in many cases, as for instance, when people plunge into them suddenly from the heated cities to find the temperature thirty or forty degrees lower

than that which they left but a few hours before. Last summer, for instance, people came to Blue Mountain Lake from New York, leaving a temperature often of nearly one hundred degrees and arriving after sundown to find one of sixty. The trip generally occupies twenty-four hours, but only the last thirty miles is in the cooler region, being traversed by stage coach. So the change of thirty or forty degrees is made within six hours. Tourists arrive clad in the same attire to which they were accustomed in the hot city. The result is that the entire surface of the body is suddenly chilled and various internal congestions set up, the seat of attack being governed by the point of least resistance, the trouble being generally located within the abdomen.

From the above we learn two lessons—first that the journey should be made in easy stages by those who are not robust; second, that on the last morning of the trip, when the cooler region is to be entered, woolen underwear should be donned, even such as is worn in the winter at home. This can be modified later as one becomes acclimated, but while in that region the whole surface of the body should be covered by at least a thin layer of wool. Even the most robust often succumb, so this rule applies to all.

As usual, the drinking water played quite a large part in the production of annoying conditions. The lessened barometric pressure and the resulting lessening of blood tension seem to create a demand for more fluid within the bloodvessels. At any rate, all newcomers indulged to excess in the "delightfully pure drinking water" which was furnished. "Here at least we need have no fear of microbes." But there was generally a sequel.

I was unable to make any tests of the water, lacking suitable apparatus and reagents. The purity of the water was not so much doubted, for its source was on the side of the mountain, five or six hundred feet above the hotel. I know that the water source had not been examined during the spring, so there was a chance for contamination by decaying vegetable matter. I do not think that there was any possibility of contamination by animal matter, surely not by fecal or other discharges from human beings.

It was the mineral constituents of the water which were productive of harm. The water was "hard." It was clear and iridescent. There was always a whitish, iridescent film to be seen on the top of the water in the large supply tank, to which the water came through galvanized iron pipes from the side of the mountain. The water was always in motion within the pipes.

After considerable thought was expended upon the matter, the conclusion was reached that the water contained excessive amounts of mineral acids. It was not the presence of such mineral matters as would produce catharsis alone, but an excessive irritation was produced. So excessive was this irritation that it acted almost like an infection, yet it yielded readily to treatment by alkalies. The water lacked the power of dissolving uric acid and assisting elimination. The stomach and bowel troubles were characterized by excessive acidity and fermentation with flatulence.

Another point to be noted is, that most people attempted to follow the same mode of life, amid the changed surroundings, as is followed at home; the lesson that this is impracticable often being learned at considerable cost. It was soon learned that the special region had a special diet provided for it by nature, and woe to him who attempted to live too artificially so near to her heart!

Instead of maintaining a table in keeping with the rustic and crude surroundings, French or Italian cooks prepared all sorts of deadly pastry, and it was a noticeable fact that to these entrées many turned the greater share of their attention. Pancakes furnished a prominent article of diet for many all through the summer. The ultra-American appetite has created a demand for such articles of diet there. When people are taught what they shall eat, with sufficient force and universality, there will be demand for food better suited to surroundings and real needs.

The feast of trout and venison which advertisements led one to anticipate was not forthcoming. Avarice purchased fish outside, which was sent in barrels, because it was cheaper. It costs something to have men out catching trout and shooting deer; and hotels are run for the purpose of making money—*because people allow it to be so.*

When the public creates an absolute demand for proper food it will be supplied.

Overeating was a prominent factor in many cases of sickness. The changed surroundings, the cooler, bracing atmosphere, and the general exhilaration which they produced, induced people to unconsciously take more exercise than they were ordinarily accustomed to or prepared for. This was conducive to good appetite, and all confessed that when meal time came they "just gorged" themselves.

In contradistinction to this overeating among the guests, undereating or malfeeding was conducive to certain disorders among the servants. Many of the waitresses, for instance, were young women with tuberculous tendency, who were unable to pay for a summer's outing or for treatment at a sanatorium, so they had been advised by their physicians to obtain positions at one of the Adirondack hotels. But if those physicians could see the quarters in which these young women are obliged to sleep, and the food which they are forced to eat, and the long hours during which they work—5 A. M. to 9 P. M.—I am sure they would hardly send them there with any expectation of improvement. This work they do for three dollars a week, and when they fall ill their pay is stopped and they are forced to pay for the miserable food which is served to them.

Strangely enough there were cases of heat prostration. The cool air is so deceptive that when the hottest days come, with the direct rays of the sun pouring down in the early afternoon, the effect of the heat is not perceived until serious symptoms come on. Babies were affected by the heat and sudden changes in the weather just as they are in the cities, thus breaking the delusion that to repair to the mountains is to escape from all the evils of the hot season. It was not that the temperature was high, even on the most troublesome days, but the sun's rays were just as powerful and direct.

The etiologic factors, then, which worked together to produce the conditions about to be enumerated were, first, cold; second, the water; third, improper diet, with overeating or underfeeding; fourth, the sun's heat.

The pathologic conditions, resulting from these causes, which we may pronounce peculiar to a sojourn in the region in question, and from which individuals were not suffering when they left home, are as follows, including tuberculous cases, which were aggravated rather than improved:

I. (*a*) Pleurisy; (*b*) pulmonary congestion; (*c*) pulmonary hemorrhage.
II. Gastritis.
III. (*a*) Enteritis; (*b*) duodenitis; (*c*) colitis.
IV. Gastro-enteritis.
V. Cystitis.
VI. Insolation.
VII. Typho-malaria.

The cases were pronouncedly congestive rather than infectious. Most were characterized by high temperature, but recovered rapidly.

It will be noted that, contrary to the advertisements of hotel proprietors, tuberculous patients were admitted as guests. Some of them expectorated freely. We cannot expect the hotelkeepers to make diagnoses; but physicians should conscientiously direct such patients to some such colony as Saranac Lake.

I. There were cases of suspected tuberculous pleurisy, which had come in the hope of being improved, but, no special provision having been made for life amidst changed surroundings, they were aggravated rather than improved, until special precautions were adopted and proper conditions supplied for acclimatization.

There was one class of cases of pleurisy, which experience proved to be due to sudden determination of blood to the part brought about by exposure of the surface of the body to the cold atmosphere. Abortive treatment together with woolen underwear was sufficient to end these cases in a short time.

There were still other cases which were due not only to exposure to cold, but also belonged to that class of cases in which inflammation of a serous membrane is set up from uric acid or alloxins circulating in the blood (gouty pleurisy?). In these cases, the addition of alkalies to the treatment, correction of the diet and increase of elimination put an end to the trouble. The inadvisability of sending a patient in the third stage of phthisis away from home was well illustrated in one case. A young woman came direct from Boston, having been sent by her physician. The fatigue of the long journey, lessened barometric pressure, the general exhilaration produced by the surrounding atmosphere, together with inadvisable overexertion of too prolonged walks, brought on fatal pulmonary hemorrhage. There was a cavity in the left lung, somewhat below the clavicle and near the sternum, which filled and refilled with blood, in spite of all that could be done. The hemorrhages began one Wednesday night and death came just a week later. Now this woman had either not been made well aware of her condition and the necessity of taking care of herself, or else she utterly disregarded all instructions which had been given her.

II. The stomach came in for its share of trouble. Acute gastritis resulted from cold, the water, overeating, improper diet, and the lithemic condition which, in other cases, found a vulnerable point elsewhere. Excessive acidity, with fermentation and the

resulting flatulence and pain, was an important cause of discomfort in these cases. There was high temperature, and the pain was intense in some cases. Alkalies and the substituting of Vichy for the drinking water, was the treatment indicated.

III. Intestinal troubles furnished a long list of cases. The same causes were at work in all. I considered cold to be probably the most active factor, with the water next. Improper diet and overeating played a part here, too.

There were cases of enteritis, with much pain, and flatulence, and frequent movements from the bowels. The latter was not a simple diarrhœa with copious movements, but there was much irritation, with scanty, painful movements. There were flecks of blood and mucus with some of the movements. A thorough cleansing of the intestinal tract, together with alkalies, abstinence from the water, an intestinal antiseptic in some cases, and means for keeping the abdomen warm, were sufficient to end these cases in a short time. In some of the cases it was found necessary to wear a full suit of woolen underwear. In others, the Jaeger abdominal band was found to be excellent. Families which go to the region each year have learned to take a supply of these knit bands with them.

There were three severe cases of infantile summer diarrhœa, or enteritis, among the children of the inhabitants. These occurred with the hottest days and sudden changes in the weather, just as they do in the cities, yet the thermometer was rarely above 70. On the colder and rainy days it would descend to below 60°, even 50°. From this we may conclude that it is not a temperature near 100 degrees which is required for the production of summer complaints in children, but one considerably higher than the average.

There were cases of colitis (dysentery) among children, with the passage by some of enormous amounts of bright blood. These were contemporaneous with the cases of enteritis, and probably due to the same causes, as no others could be found for them.

People with so-called bilious tendency were easily upset, duodenitis, with slight jaundice, supervening.

In connection with this report of intestinal cases, I will relate several facts which I learned during the summer. The first is that typhoid fever has become endemic at Blue Mountain Lake, having been imported from North Creek. North Creek is the terminus of the railroad, from which stage coaches bring tourists into the mountains. Typhoid fever has been endemic there for

some time, and about two years ago an epidemic occurred there. A family of New Jersey people, en route to Newark from Blue Mountain Lake, was infected by water on the train, obtained at North Creek, and passed through a prolonged siege of typhoid after reaching home. Each autumn there occur several cases at Blue Mountain Lake. This fact is kept as a sacred secret by all the inhabitants, lest tourists be driven away and their source of income curtailed. But it is only right that the fact should be known. I learned of five cases which had existed in the place during the preceding autumn and winter. Most of my information was derived from a young man who had nursed some of the cases, having himself formerly been a victim. There had previously been several cases at one of the hotels, which had moved the proprietors to obtain the water supply from an entirely new source. Sewage from this hotel emptied into the lake.

There were two cases in the early part of the summer which acted very much like typhoid at the start, and after the above facts had been learned each case was approached with the feeling that it might be the result of some of the typhoid infection which certainly existed in the neighborhood.

There were several cases of gastro-enteritis due to the same causes and differing in no way from the cases of gastritis or of enteritis.

There was a young woman, possessed of a strong gouty tendency, who suffered considerably during the early summer. At the start her family feared typhoid, and I was obliged to acknowledge that she did exhibit some of the prodromata of that disease; but the outcome soon proved it to be otherwise.

Cases of cystitis soon yielded to treatment by alkalies. One man, an inhabitant, had twice been to New York for treatment. As long as he remained away his condition improved, as soon as he returned home the old trouble came on.

The heat of the sun was so tempered by the cool breezes that many were in the habit of going about bareheaded. One young man, accustomed to doing this, was severely prostrated while playing tennis under the hot sun, and another patient, a woman, suffered in the same way after a long walk in the sun, though she was not bareheaded.

One case was recorded as typho malaria. There was the regular sequence of chill, fever and sweat with severe intestinal symptoms, severe headache, persistent insomnia, and great general dis-

comfort. A second attack was not waited for and the blood was not examined, as there was no microscope at hand. If the plasmodium was present it must have been imported by the patient, as it was unknown to the region.

Many of these cases would have proved serious, and even fatal, had medical attendance not been at hand. They seemed worthy of record since the general impression prevails that a sojourn in the Adirondacks means freedom from all fleshly ills.

There is another class of cases which I would mention, namely, cases of so-called hay-fever. This is an affection of the vasomotor nervous system, and the question whether it will be relieved by a sojourn in the mountains depends upon whether the nervous system will be toned up by the bracing surroundings, or whether the rare atmosphere will allow of such swelling of the mucous membrane that the toning of the nervous system is overbalanced. Some hay-fever patients were improved and others were not. I noticed that those who claimed to be relieved used a good deal of cocain in nasal spray. I can state decidedly that one of my patients suffered from this neurosis while in the mountains and passed through a more serious siege last autumn than ever before.

These notes are the outcome of an experience at one particular point in the Adirondacks, and are given in the hope that they will throw some light on certain phases of climato-therapy. Whether the deductions here drawn will apply to other points in that region I am unable to state.—The Philadelphia Polyclinic.

COMMON ERRORS ABOUT SNAKES.

By Nicholas Pike.

Much has been written recently in relation to snakes, when in danger, receiving their young into the esophagus and retaining them until danger is over. This has been denied in strong language by many naturalists who seldom think it worth while to study the biology of this interesting class of animals. It appears strange that at this late day the wildest superstitions are still extant with regard to reptile life. There is one reason that may account partly for it. Nine out of ten persons who meet a snake either kill it or run from it. Now if a little trouble were taken to

watch some of their habits, they would soon lay aside their erroneous ideas.

I intend to show in this article that not only one species of snakes, but many, have been known positively to care for their young in this manner. I shall also try and correct many errors concerning snakes. It is a very difficult matter to eradicate superstitious ideas and foolish errors, when universally engrafted upon the public mind. Many of these errors have become fixed among the ignorant, and even among some that are educated.

That snakes receive their young into the esophagus when they are in danger is a well known fact. More than forty years ago Sir John Richardson published an account of a rattlesnake that he saw take a brood of young ones she attracted by her rattles, and they darted into her mouth, which she held wide open. The moment the little ones heard the warning, they disappeared into her esophagus.

Prof. Brown Goode, Curator of the Smithsonian Institution, Washington, in a paper read by him before the American Association for the Advancement of Science, proved that the performance was not an uncommon one.

Col. F. W. Prince, of Hartford, Conn., says he saw a snake, probably an adder, about whose head and body her young brood were disporting themselves. Instantly the mother snake opened wide her mouth and down her throat ran the baby brood, one on the tail of the other. Dr. Edward Parker states that when in Paraguay he saw seven young rattlers run into the mouth of the old one. He secured them, and they are now in the collection of the National Museum, Washington.

Thomas Proctor, lawyer, naturalist, and gentleman, whose veracity is undoubted, informed me that he has seen the common garter snake take her young into the esophagus and, after retaining them for some minutes, has seen them come out again.

I have observed this habit in a number of species, including the rattlesnake, the common adder, Heterodon platyrhinos, two species of garter snakes, Eutania sirtalis and saurita. In the year 1842 I made a tour on foot round Long Island, in order to gain a knowledge of its fauna and flora. A naturalist of distinction accompanied me on the trip. At this early period snakes, including the rattler and copperhead, were there not uncommon. The striped pine snakes and sand adder were very numerous. One day while in camp I observed, very near my tent, a striped snake

with a number of little ones around her. I called my companion, who was near, to come and see the pretty sight. As he came forward the snake became frightened and made a blowing noise, which the young understood, for they quickly gathered near the head of the mother, who opened her mouth wide, and they all disappeared into her esophagus. I quickly seized her by the neck and secured the whole family, seventeen in all. I kept them a week and then gave them their liberty. During the period of confinement I had the pleasure of seeing the mother protect her young several times in the manner above stated. Prof. Brown Goode has accounts like the above from more than one hundred different sources. Of these, sixty-seven observed the young dart into the old snakes' mouths. Twenty-two noted the means of communication that warned them of danger, which was either a blowing, a click, a rattle, or whistle. Five witnesses saw the young go in and come out again, and one observer saw the act repeated on several successive occasions. Why should we disbelieve that the snake take their young into the esophagus, when it is well known that fish do the same thing? The fish in Panama called the arius, according to Agassiz, carry their young in this way. While at the Seychelles group of islands, Southern Africa, it was my custom to bathe in the ocean every morning. On one occasion, in company with an officer of the English army, we observed a fish, which I thought to be "Laffe volant," lying quite motionless near the bottom, in shallow water. Numerous small fish, two inches in length, were swimming around the larger fish's head. When we disturbed what proved to be the mother, she opened her mouth wide and instantly the young disappeared down her throat. At first we thought she had devoured them, but in a few minutes they all appeared, swimming round the head of the mother as before. Again when disturbed she did the same thing. We tried the experiment with a number of individuals with same results. We thought at the time we had made a great discovery. In speaking of the circumstance to some friends, we found it was well known to those living on the island.

There is a fish in the Amazon River, South America, that has been observed to care for her young in the same manner. The fish is called the "studis." There are many animals that have a similar habit. Among the reptiles there is a lizard, native of South Africa, I have observed do this. I could add largely to the above, but space will not admit in this article.

The common error, which is almost universal, is that snakes bite. Snakes do not bite! Their jaws are connected only by a cartilage, are not hinged, and cannot be brought together with any force. The poisonous snake strikes from its coil, throws its head and body forward, and strikes or hooks its fangs into the object aimed at. The entire work is done with the upper jaw, the lower jaw having nothing to do with it. The serpent does not swallow its prey; but slowly draws itself over the creature it devours. It is enabled to do so by the elasticity of the skin and the extraordinarily loose condition of the teeth-bearing bones of its fangs. As for a snake depositing a thick slime all over its prey before swallowing it, it is a mistake. The tongue does not carry moisture enough to do this, but when once inside the animal there is an abundance of saliva. The tongue is looked upon as a sting, and the common expression is "Look out for its sting!"

The tongue is a mobile, extensile organ of both touch and taste. So far from being a sting, the delicate implement is of the greatest use, and expresses fear, anger, or pleasure; also when testing any objects of food. This we have often proved whenever a different kind of food was given. There is no doubt but that the tongue of a snake is very important to its owner, as the slightest injury even to its tips generally results in the snake's death.

That Snakes Fascinate Their Prey.—The notion formerly entertained that snakes fascinate their prey is superstitious and now exploded.

Shedding of the Skin.—The general opinion is that snakes shed their skin once a year. Snakes do not shed their skin or hide, only the cuticle. I have known this to take place four or five times in one year.

As snakes have no ears, they are supposed to be quite deaf. Snakes are very sensitive to sound when there is a vibration in objects in contact with their bodies. It is said that they have also an appreciation of sound through the delicate nerve of the tongue.

Many positively assert that snakes are not fond of music. As a rule, snakes are fond of music. I have had them wriggle about, erect their heads and bodies, to the sound of the piccolo and flute. Loud music, such as the cornet and bugle, frightens them. While living in the East, I was frequently invited by friends to accompany small hunting parties to the forest. On one occasion I had been out all day, and our bungalow was left in charge of a

servant. On our return we were informed that a large and dangerous serpent had been seen to ascend to the thatched roof and secrete himself there. A fakir was sent for and came immediately. Seating himself, with a companion, on the floor, in the centre of the house, he commenced to play an instrument similar to a clarinet. Soon the snake made his appearance, first showing its head only; gaining confidence, he soon moved to a position directly over the head of the musician, letting himself down full length, holding on a minute by its tail, then dropping down to the floor and coiling up directly where the men were seated, elevating its head and body about twelve or fourteen inches, swaying backward and forward, keeping time to the music for some minutes, when the musician's assistant placed a basket over its head and secured it. Snakes are very timid creatures, and always try to avoid man when they can do so; but when cornered, and find that they cannot escape, will turn upon him. I have had small garter snakes do this, and have always given them their liberty for displaying so much courage. They are easily frightened, but if handled carefully will soon become very tame and familiar. Although I have studied them for many years scientifically, I am always learning something new about them—some new disclosure in their life history. So it is in all branches of nature; therefore, it becomes very important to note down carefully observations for future reference and comparison. The proper way to study natural history is in the field. There are few works on natural history that are professionally treated, and many of these are unsatisfactory. Those who have been obliged to examine carefully, in the hope of collecting original observations, statements of facts worthy of repetition, or remarks properly illustrative to obtain the information desired, have been sadly disappointed. There is no doubt that many naturalists of the present day study natural history improperly. A collection of stuffed bird skins, sea shells, reptiles in alcohol, scientifically arranged, with Latin names, and locality, is all that is required. Biology is ignored! I am not much surprised at the superstition which many people entertain about snakes. Most people have great antipathy toward them, and the hand of man is almost universally raised against them. With the exception of the poisonous kinds, the snake should be protected as a friend to mankind. They destroy an immense amount of rats and mice, and are truly a friend to the agriculturist.

Many people have erroneous ideas which were instilled into their minds in childhood, especially concerning the serpent, and it is a very difficult thing to eradicate such ideas of long standing. It seems incredible that such things exist and are countenanced in this enlightened age, especially by those who profess to be educated. But such is a fact; and the object of this article is to correct some of the most glaring of these mistakes.—Scientific American.

MEDICAL EXCERPT.

By T. P. Corbally, A. M., M. D.

Nature and Treatment of Obesity.—M. J. Œrtel reports in the Wiener "Meedizinische Wochenschrift" his views of obesity.

The disease is one of nutrition in which there is an excessive formation and accumulation of fat, at first with the simultaneous increase of azote, later with diminution of albuminoid substances and an increase in the quantity of water in the system. The unequal increase in the volume of the body, resulting from the accumulation of fat and the functional disturbance of some of the organs, especially the respiratory and circulatory, suffice to give it the pathological character of obesity and to cause it to be classed among the diseases of nutrition. The causes of the increased formation and accumulation of fat are in the incomplete destruction of alimentary substances ingested, and also in the adipogenous aliments through the muscular and other physiological functions, and in the accumulations of these substances under the form of fat in some regions of the body.

Some etiological conditions have a real importance. These are: Hereditary predisposition, the anomalies of antagonistic articles of nutrition, the constitution and the physiological temperament. The most important causes are errors in diet, resulting in indigestion, in a superabundance of inappropriate articles of nutrition, and an insufficient combustion.

The quantity of liquid imbibed and certain endemic conditions have a marked influence on the destruction of fat.

Œrtel points out two forms of obesity, the plethoric and the anemic, both of which pass quite rapidly into a third form known as

the hydremic. The first is always a form resulting from hyper-alimentation, which influences in a special manner the heart and the circulation. The anemic form is caused by too small a quantity of hemoglobin, in consequence of a diminution of the process of oxydation. Here also the cardiac insufficiency produced by the accumulation of fat in the heart, or on its surface, has a very important influence; it is important to mention also the arterio-sclerosis, atheroma and diabetic adipogene. The accumulation of water is also a correlative of the impoverishment of the organism by diminution of albuminoid substances. Serous plethora is caused by progressive disturbance of the circulation, resulting from insufficient cardiac action and from insufficient action of the urinary organs. The obesity often ends in paresis of the heart—fatty degeneration, arterio-sclerosis myocarditis; from cerebral trouble—apoplexy, hemorrhage, thrombosis, embolism—more rarely from diabetis complicated with coma and marasmus.

The prognosis is always doubtful. In a prophylactic point of view there are two classes of persons to be considered: those who have a hereditary tendency, and those who have suffered from obesity but have been relieved of the corpulence by medical treatment.

The treatment should be directed to two objects: to prevent the continued formation of fat, caused by the articles of diet, and to increase the combustion of the accumulated fat. The treatment is then hygienic and mechanical.

In the plethoric form, Œrtel advises an increase of the albuminoid substances, a lessening of the quantity of articles that increase the adipose tissue and a little restriction on the use of liquids.

The anemic form requires, on the contrary, a restriction of the liquids. In the aged, in whom the obesity has a tendency to decrease, the hydremic form must be opposed by the ingestion of an abundance of albuminoid material, of fat-producing substances and the hydrocarbons. The increase of articles belonging to the latter class and the diminution of liquids prevent the too rapid destruction of fat.

Pathological Excitation of the Nervous System.—M. le Professor Benedikt, of Vienna, has written a very important communication on the physiology and the general pathology of the nervous system, and the relations that exist between the excitations of cerebral origin and the development of the cranium.

His communication is not limited specially to this one point; his object is to show that there is a certain intimate relation, pre-existing, between certain forms of excitation and certain sensations; between the development of certain pathological conditions and certain sensations.

The "Gazette Hebdomadaire," 9th January, says it takes from the "Bulletin Médical," which is always well informed, the resumé of the conclusions of the learned professor of Vienna.

Benedikt insists, first, on two fundamental bio-mechanical laws.

The first is as follows: Nature arrives at the maximum of effective power, and at the greatest degree of perfection, by a minimum of energy, in a minimum of time, with the minimum of the most appropriate matter, and under the form of the most favorable in regard to the functional end to be gained.

The second law may be called: the law of anatomical and functional perfection—that is to say, there is a superabundance of material and of energy of the organs and the organisms in favor of the continuance of life. The organs, however, act only in the ordinary way with a minimum of latent energy and of matter and of volume.

A second law is, that of the correlation of the natural influence that the different organs exert on the conditions of their vital energy, and on their reciprocal evolution. Of course, unhappily, we do not know as yet all the complex mechanism of this dependence of one organ in regard to another. A very apt example is that of the reciprocity that exists between the development of the skull and that of the brain, or between the internal organs and their integuments.

It must be admitted that the same mechanism already pre-existing in the normal state, for the material dependence of the organs, may be placed in action as soon as one physiological excitation is replaced by another action, but one in the pathological order.

The law that governs the transmission of nervous excitation of every kind, "or law of consonance," is already universally admitted for optical and acoustic sensations. Each nerve fibre is a good conductor only for specific excitations, while it opposes great resistance to excitations of a different order. While the physiological follow, so to speak, only the beaten track, those of the pathological order may, besides, be transmitted by means impracticable and quite unaccustomed for the former. The most variable unions may be formed, according to the seat and the na-

ture of the pathological process: thus it may be sometimes produced exclusively by pain, at other times by convulsions or by vague sensations that follow the irritation of a sensitive nerve. It cannot be denied that morbid irritation may be transmitted in the ordinary two-fold manner.

It follows from what has been advanced that morbid consonances are more complicated than those that are physiological in their nature.

Pathological excitation may be propagated under three forms:

1. Functional propagation, which is identical with physiological excitation.

2. Propagation under the form of an anatomical lesion. This may be of the same nature as the primary lesion.

3. It differs from that as in affections due to neoplasms.

The most important phenomenon of neurology consists in the propagation by leaps of the secondary process, by "incoherent diffusion," as M. Benedikt says. This diffusion is still more irregular, more incoherent in neoplasms than in diffused degenerescences.

The organic systems secondarily degenerated have not necessarily any physiological correlation; this is the general supposition at the present time. This supposition has become the source of fundamental errors, clinical, physiological and histological.

As a consequence of the incoherent diffusion of secondary lesions, it is necessary to follow up the separation and the localization of the different symptoms and syndromes, and to create new laws of diagnosis and of diffusion.

WATER-BUGS IN THE STOMACH.—M. Leabaulbène made a report to the Académie of a case of M. Dubois, in which fresh water containing grubs was swallowed and they remained alive in the stomach for some time, causing constant and distressing vomiting. Chloroform was given for the vomiting and purgatives were freely administered. The grubs—crevettes—were expelled and water previously boiled was given, and the patient recovered.

EPILEPSY.—M. Voïsin gives a clinical study of this too-prevalent and intractable disease in a work recently published, a summary of which is given in "Le Progrès Médicale," 22d January.

The facts and deductions given in this work deserve the most careful attention, as the judgment of a practitioner of great experience and of ripe judgment. The definition of the disease, its

causes, symptoms, forms, its evolution, diagnosis, prognosis and syndrome, that is, the whole of the symptoms that are found more or less generally in each individual, are given in detail.

The pathogeny of the disease is particularly interesting. There is no known lesion that is pathognomonic of epilepsy. But it does not follow that we are dealing with a disease *sine materia.* The symptoms of epilepsy have a very remarkable analogy with those of diseases having a toxic origin. The similarity of the symptoms, such as digestive disturbances, epileptic manifestations, the hypotoxic character of the urine, compared with the hypertoxicity of that fluid when the patient returns to his normal condition, seem to be the incontestable proofs of the existence of a poison retained in the system, or formed by the organism, the epileptic manifestations of which would be excited in a person predisposed by inheritance. The predisposition is an essential element—that is, it constitutes an unstable state of the equilibrium of the nervous system.

The blood of these patients, black, coagulating almost instantly in the air, contains staphylococci which secrete toxines, the accumulation of which produces the convulsive attack. They irritate the vaso-motor centres, either by paralysing the vaso-motor dilators or by contracting the vaso-motor constrictors, and they also directly modify the protoplasm of the cells of the encephalon. These latter hypotheses would explain the paralysis by inhibition consequent upon the convulsive attacks. But there must be a previous condition of the nerve cells, known as hereditary. This predisposition is developed by many causes—by alcoholic poisons, it may be of traumatic origin, be caused by cicatrization, by lesions of the brain, by irritation of the extremities of the nerves, by moral or by physical influences, etc. But whatever may be the cause from which the irritation proceeds it always terminates in the cerebral cells. But the epileptic syndrome is evolved differently according to the cause; thus in reflex epilepsy, the intelligence remains normal for a long time, while in epilepsy from gastric disturbance, as from intoxication, stupor often follows immediately after the paroxysm, and the consequent hebetude arises as a rule from changes in the nerve cells.

M. Voisin fully analyzes the physiological conditions in their relation to the different regions of the encephalon, and the three kinds of neuroses.

From the pathogeny, as here developed, he deduces a therapeutic system that is rational, judicious and applicable to the different forms of the disease.

THE PULSE OF CYCLISTS.—MM. Roussy and Comte, "La France Médicale," 7th January, have carefully measured, in the laboratory of M. Marey, the pulse and the respiration of a cyclist under different degrees of speed and with different degrees of resistance.

They have found that the rapidity of the pulse was in direct proportion to the work done, but that the arterial pressure did not follow the same proportion, and the force always remained reduced.

SANOSE, a new albumen preparation, has been sent to us ("Deutsche Medicinische Wochenschrift," Oct. 7th, 1897) by the "Chemische Fabrik auf Actien, formerly E. Schering," of Berlin, with a request to experiment with it. It is a combination of albumens containing 80 per cent. of casein and 20 per cent. of albumose. Sanose is a white powder, odorless and tasteless, forming an emulsion when stirred with water. We have administered it in the following forms: In milk and cocoa (about one-half to one and one-half ounces to a pint of milk), in pea or bean soup (about one-sixth of an ounce to a plateful), and with Knorr's soup-powder, In none of these forms can the Sanose be tasted, and it is therefore taken by patients for a prolonged period without objection. As we did not believe that a pure albuminoid diet fulfils all the nutritive requirements of a sick organism, we have sought to combine Sanose with other foods of easily-digestible character. Thus to one patient (Case I.) we gave Sanose mixed with levulose (Diabetin); but this mixture proved rather too sweet to be taken for any length of time. A mixture of Sanose with maltose, isomaltose, and dexterine proved very pleasant, and it is possible that by combining these easily-digested carbohydrates with Sanose and an easily-digested fat in a gelatine capsule, all the necessary foodstuff may be supplied. In conclusion, Sanose is a palatable, easily absorbed albumen preparation, capable of manifold employment, and possessing the advantage that no flavoring chemicals are added to it in its preparation. It can be given without the patients tasting it, and its price is a satisfactory one.

A FEAST.

FROM THE NEW YORK TIMES.

Taters in de ashes roastin',
  Coffee b'ilin' on the fiah.
Hoe-cake 'fore de bright flame toastin',
  Draw yore cheer up leetle niah;
Now the sweet smell yo am ketchin',
  Cos dat kivah don't fit tight,
Dat ole bake-kettle needs wotchin',
  Ef dat possum's done cooked right.

Lis'en ter dat grease er splutt'rin',
  Playin' ob er merry chune;
Lawz, I likes ter heah de mutt'rin'—
  Crittah's fit fur eatin' soon.
Son, jes gib dem yams er turnin',
  Yo's got sense ernuf, I 'low,
I kin smell der 'lasses burnin',
  Mus' be neahly done by now.

Dat ar wuz er hunt no jokin',
  Ast dat yallow bob-tail houn';
See, de hoe-cake am er smokin'—
  Turn dem bar'l-tops plum roun'.
Fat? Dat possum, Sah, wuz dinin'
  Up er big persimmon tree,
While de torch him eyes wur shinin',
  Shore's yore bawn, he winked at me.

Reckon eb'ry t'ing am ready;
  Praise de Lawd fur food ter eat;
Hole dat plattah mighty steady,
  Hit's er meal what can't be beat.
Stir de fiah up till de glowin'
  Sen's dem flames er dancin' bright,
'Low dey nebbah had de showin'
  Ob der likin, purtier sight.

—Mrs. O. B. Merrill.

Tuscumbia, Ala.

EDITOR'S TABLE.

SANITARIAN, MARCH NUMBER, 1898.

☞ ALL correspondence and exchanges and all publications for review should be addressed to the Editor, DR. A. N. BELL, Brooklyn, N. Y.

OPPOSITION TO THE HEALTH SERVICE.

The Medical Society of the County of New York has recently blighted the most dearly cherished honor of the medical profession—the promotion of preventive medicine.

The publicity that has been given to the action referred to and to its repudiation by several of the most prominent members of the County Society, and of other medical organizations of the city, is such that it hardly seems necessary to state that we refer to the contention of the committee of the County Society, at the meeting of the City Board of Health, January 26th, as comprehended in the following protest by the editor hereof, presented at the next following meeting of the Board:

Office of THE SANITARIAN,
February 1, 1898.

Board of Health of the City of New York:

Gentlemen: As a votary of Preventive Medicine, I respectfully protest the asseverations of the representatives of the New York County Medical Society who appeared before you on the 26th ultimo with regard to the preventive measures instituted by the Board of Health and fortified by the city charter, against the spread of tuberculosis and the restriction of the functions of the Board in other respects.

Dr. Satterthwaite, speaking for the committee, is reported to have said, with reference to the Board's requirements for the prevention of tuberculosis: "It is a singular fact that the plan advocated by the charter is in line with a similar one tried in Naples in 1782," than which, in its most essential feature, nothing could be more widely different.

The measures instituted in Naples are well known to have been empirical, based upon the simple recognition of the contagiousness

of tuberculosis and erroneous notions of how it was contagious. It was supposed to be communicated by the breath and by exhalations from the body.

In striking contrast with such ignorance, and consequently misdirected effort, the action of the Board of Health is based upon the report of the consulting pathologists of the Department, Drs. T. Mitchell Prudden, Henry P. Loomis and Herman M. Biggs, in 1889, in which special emphasis is laid upon the following facts:

"First—That tuberculosis is a distinctly preventable disease.

"Second—That it is not directly inherited.

"Third—That it is acquired by the direct transmission of the tubercle bacillus from the sick to the well, usually by means of the dried and pulverized sputum floating as dust in the air.

"The measures then suggested for the prevention of the spread of tuberculosis were: First, the security of the public against tubercular meat and milk, attained by a system of rigid official inspection of cattle. Second, the dissemination among the people of the knowledge that every tubercular person may be a source of actual danger to his associates, if the discharges from the lungs are not immediately destroyed or rendered harmless. Third, the careful disinfection of rooms and hospital wards that are occupied, or have been occupied, by phthisical patients."—(Official report of the Board of Health to Mayor Strong, 1897.)

With this knowledge at least the committee is doubtless perfectly familiar. That they should venture to compare it, or the practical deductions from it, as in the charter, with that which was exercised in Naples in 1782, is alike discreditable to them and the Society they represent.

Moreover, the committee seem to have been purblind to, for they are surely not ignorant of, the greatly diminished and *continuously diminishing* mortality from tuberculosis during recent years, proportional with the practical application of the knowledge enunciated by the consulting pathologists of the Board, as quoted, not only in isolated hospitals and sanitaria for the special care of consumptives, conducted on scientific principles, but generally, since the sputum of consumptives has been recognized as the medium by which the disease is communicated and care is taken to destroy it ere it becomes dried dust afloat in the air, endangering the lives of all who breathe it.

Of like nature, though perhaps fraught with less danger to the public health, is the committee's proposed restriction of the func-

tions of the Board of Health to protect the community, physicians included, against the use of spurious vaccine lymph and diphtheria antitoxin, because, forsooth, the Board's action in this regard conflicts with the business interests of manufacturers. Logically, according to the committee's contention, all the laws of recent years against the adulteration of food and drugs should be repealed, because they conflict with the business of such people as would impose spurious food and drugs upon the public. Yet the committee did not know, until instructed by President Straus, that the Board of Health began its manufacture of antitoxin as a matter of necessity, not in competition with anybody, but before it was undertaken as a business enterprise by any one. Nevertheless the committee contended for the bill before the Legislature, prepared under the auspices of the Society they represent, removing consumption from the list of contagious diseases and taking away the power of the Board to sell antitoxin and vaccine lymph to cover its cost of preparation. The committee might have been told that the dissolved vaccine also, now so generally approved and almost exclusively used, was, like antitoxin, first prepared under sanitary administration (by the Board of Health of Chicago), wholly independent of and not in competition with any business enterprise, but for its greater purity.

Clearly neither the committee, nor the Society which constituted them—if they represent it—have kept apace with the progress of preventive medicine either in its relation to the public health or to medical practitioners, in its promotion of the most favorable conditions to the successful *treatment* of disease, as well as its prevention, or they would not have arrayed themselves as they have in this instance and in the bill before the Legislature, which I include in this protest because it is, in substance, like the asseverations of the committee, in contravention of measures eminently necessary for the protection of the public health.

Very respectfully,

A. N .Bell, M. D.

Protest by the Willard Parker Hospital.—At a recent meeting of the Medical Board of the Willard Parker and Riverside Hospitals the following resolutions were adopted:

"Whereas, Senate bill No. 5, now before the Senate Committee on Cities, contains radical changes in the methods now in operation, and involves material restriction in the character of the work now performed in the Department of Health; and

"Whereas, The passage of said bill would interfere with the continued progress and successful administration of the department by prohibiting the production of vaccine virus, diphtheria antitoxin, and other antitoxines, by restricting scientific research by limiting the work in the prevention of infectious diseases, especially tuberculosis, diphtheria, the septic diseases, and tetanus, and by removing important safeguards intended for the prevention of diphtheria, small-pox, and tuberculosis; and

"Whereas, The enactment of this bill would not in any respect tend to the improvement of the public health or be in the interest of the whole people of New York city; therefore be it

"Resolved, That this board does hereby respectfully protest against the passage of Senate bill No. 5.

"Resolved, That these resolutions be spread upon the minutes of this board, and that copies be transmitted to the Senate Committee on Cities, to the Health Board of the Health Department of the City of New York, and to the medical journals of this city."

The bill provides for the removal of the President of the Police Board from the Board of Health, makes it consist of the Health Officer of the Port and four, instead of three, Commissioners, appointed by the Mayor, to hold office for four, instead of six, years, the members of the board to elect one of their number other than the Health Officer of the Port as President; removes the authority to produce diphtheria and other antitoxins, limits gratuitous vaccination to the poor, specifies as "contagious, pestilential, or infectious diseases" which practicing physicians are required to report on pain of $100 fine, measles, diphtheria, scarlet fever, small-pox, chicken-pox, whooping cough, typhoid fever, typhus fever, cerebro-spinal meningitis, Asiastic cholera, and yellow fever. Assembly bill No. 70, introduced by Mr. Laimbeer, is identical with Senator Brush's bill.

It assumes to determine for all time what diseases shall be regarded as communicable by the Board of Health, while it omits puerperal fever, relapsing fever, epidemic dysentery, contagious influenza, all the contagious diseases of the eye and the skin, leprosy and plague, all more or less likely to be introduced in New York, considering the present relations of commerce and immigration. Yet, in the event of any such introduction, by the terms of this bill, should it become a law, the Board of Health would be powerless to impose any restrictions until special legislation could be had. Evidently the authors of this proposed law have been very

hasty in their caucus or they have a very limited comprehension of infectious and contagious diseases, as they have shown themselves to have of practical knowledge necessary for their prevention, as of consumption.

BILLS WHICH OUGHT TO PASS.—Mr. Brennan has introduced a bill in the New York Assembly providing that in the Counties of Kings, Queens and Richmond all persons, without reservation, found guilty of intoxication shall be fined not less than $3 or more than $10, or imprisonment for six months. The same penalties are to be exacted for vagrants.

Senate bill No. 79, introduced by Mr. Ford, gives the Board of Health complete control of and the right to pass upon all claims arising from the destruction of cattle affected with tuberculosis or other diseases in the City of New York.

Senate bill No. 239, introduced by Mr. McNulty, authorizes the Board of Public Improvements to establish and place under the control of the Board of Health floating hospitals for the treatment of victims of infectious or contagious diseases in the Borough of Brooklyn.

THE QUARANTINE CONVENTION announced in our previous number has been held—February 9-11th. There was a large attendance, chiefly composed of delegates from the Southern States, who are most concerned with quarantine measures for the prevention of the introduction of yellow fever. The carefully prepared programme, as published in our announcement, was submitted, but not followed. According to the report by the New Orleans "Times-Democrat," the main question was Federal or State Quarantine? But none of the advocates on either side was bold enough to announce his willingness that either one should go it alone. The sentiment of the convention was at first divided between two main propositions—(1) the committing of the entire control of matters connected with quarantine to the Federal power, whether such control was to be exercised through an independent health department or through the Marine Hospital Service extended and enlarged; and (2) the retention of control over interstate quarantine if not of maritime quarantine, in the hands of the health boards of the States.

But when the committee on resolutions brought in two reports, one of the majority and the other of the minority, the one favoring the establishment of a health department and denouncing the Caffery Marine Hospital scheme, and the other merely asking Con-

gress to make provision for the exclusion of foreign contagious disease, the matter of States' rights as a separate proposition was lost sight of, and the debate raged around the Caffery bill. But, at an opportune moment, Mr. Clark, of Mobile, in an argument of much clearness and force, reminded the convention that a Senate committee had already favorably reported the Caffery bill in amended form, and that any strong disapproval of the Caffery bill would be a very decided slap in the face of that Senate committee. And he suggested that, if there should be a direct clash of opinions as to a national quarantine measure between an important committee of the Senate and the Mobile quarantine convention, the Mobile quarantine convention would not be likely to get the best of it—in the upper house of Congress at any rate.

The judiciousness and force of this argument at once struck the convention, and henceforth while national quarantine was the subject of debate Mr. Clark owned the meeting. That gentleman proposed a substitute, intended to supplant and take the place of both majority and minority resolutions, which, as subsequently modified, was finally adopted, as follows:

"Resolved: 1. That it is the sense of this convention that Congress be requested to provide for a department of public health, as soon as practicable.

"2. That it is the sense of this convention that Congress should enact laws to provide for an efficient maritime quarantine to be uniform and impartial in its application to the different commercial ports of this country, so as to give no one or more of them undue commercial advantage over the others, and to be enforced by the several State and municipal quarantine or health boards if they will undertake to do so, leaving also to the States the power to prescribe and enforce additional reasonable safeguards of the health of the communities, provided that such State action shall not unreasonably obstruct commerce.

"3. That Congress should aid the several States in establishing and maintaining uniform, reasonable and efficient quarantine laws for affecting, but not regulating, interstate commerce, leaving to each State adequate power to protect, as it shall deem best, the lives and health of its people.

"4. That Congress should leave exclusively to the States the regulation of their purely internal commerce, and the provision of such quarantine or sanitary laws as they may deem advisable to that end.

"5. That, in the framing of quarantine laws and regulations, and in their enforcement, Congress should avail itself of the learning, experience and ability of the medical profession in the fullest measure possible, and especially by way of an advisory council."

The substance of these resolutions as a whole is the restoration of the embarrassing and obstructive provisions of the quarantine law of 1893, which the Caffery bill eliminates. In effect, the declared sense of the convention is that Congress shall establish a system of quarantine, supply the funds for its maintenance and delegate the entire management to the State and local authorities!

The absurdity of the propositions embodied in these resolutions should, and probably will, hasten the passage of the Caffery bill.

It is particularly remarkable of the sanitary authorities of Alabama and Florida and the delegates from those States to the convention that while they have striven for such legislation as would subvert the Marine Hospital Service, that on the outbreak of small-pox in their constituency they are alarmed at the results of their neglect of vaccination and call upon that service to execute the simplest of all effective measures for prevention. The needful quarantine of small-pox is wholly due to neglected vaccination, and of all the obligations of State sanitary authorities there is surely none more manifest than the use of this means of protection.

"THE FRUITS OF SEWAGE POLLUTION" is the significant caption of a forcible editorial in the "American Medico-Surgical Bulletin" of February 10th, citing the calamitous prevalence of typhoid fever in the little town of Maidstone, England, as an object lesson for Philadelphia. Maidstone is a town of 33,000 inhabitants only. Cases of typhoid fever have been occurring there from time to time for several years until last autumn, when the cases became alarmingly numerous. All along the condition of the water supply had been regarded as more than suspicious, but no effort was made to protect it. But from early autumn last year up to January of the present year there were nearly 2,000 cases, with 132 deaths, and the people have become indignant—as if they had not been supinely awaiting it. The incident is very properly regarded as an example of municipal suicide by the continued tolerance of inviting conditions, evincing a stubbornness which would do the most hide-bound American councilmen or aldermen credit. Naturally, after the frightful experience, there has been a general demand for an investigation, but the Council is opposed to it, and the Mayor of the town sapiently observed that an inquiry would do no good, because the cause of the epidemic could not be learned. As a matter of fact, the experts unofficially have found and designated the source of the polluted and disease-bearing water. But the Maidstone city fathers are not unique. They represent a class not unknown in America, and in no place better

known than in Philadelphia. The Board of Health reports of this city have long been notorious for the large ratio of deaths from typhoid fever—from 400 to 800 annually, representing from 4,000 to 8,000 cases. The enormous tax of this sickness and death rate during the last dozen or twenty years has cost the city more than ten-fold the amount it would cost to purify the present water supply by filtration—admitting that this would be less costly and more easily practicable than the prevention of the pollution would be—or provide a new source of supply altogether free from pollution.

MORTALITY AND MORBILITY REPORTS AND REVIEWS.

Correspondents under this head are particularly requested to be as prompt as possible.

ALABAMA.—W. H. Sanders, M. D., State Health Officer, Montgomery.

POST-EPIDEMIC DISINFECTION.

Office Board of Health,
Mobile, Ala., January 26, 1898.

Acting upon the well considered advice of the Board of Health, the Mayor of the city and the General Council have been active in carrying into effect a "post-epidemic disinfection and fumigation" of houses in which cases of fever had occurred from the first of September last until the final disappearance of the fever in November. This very necessary sanitary precaution and work has been conducted under the efficient superintendence of Dr. Seaton Norman, of the United States Marine Hospital Service. Whilst a large number of houses and apartments in which cases of fever had occurred during the prevalence of the disease have been subjected to this treatment within the past ten or twelve days, it has come to the knowledge of the authorities and the Board of Health that many such houses have escaped the operation of this salutary process, from the fact that many such houses have not been reported by the physicians having had charge of such cases of fever, and the occupants of others have declined to have this all-important disinfecting treatment applied to their residences—some under a mistaken view of its importance in the future and of its utility as regards the safety of the entire community and the reputation of the city; others from a disinclination to subject themselves and their families to the slight inconvenience for a few hours. What has been done thus far will not be effective in securing the city against the probability or the possibility of another outbreak of the fever dur-

ing the ensuing summer, if foci of infection remain scattered throughout the city. A single such instance may endanger the entire community, and inflict a cost of thousands of dollars from a repetition of the panic and consequent disturbance of all the monied, commercial and social interest of the city. The protection against such a calamitous condition must, in part, be secured by a perfect and thorough application of the means now within our power. No time like the present, and no means like those now within our possession, can give us that sense of security, or that promise of protection in the future, which the best interests of our community so urgently demand. I am requested to urge these views upon the public, and to ask all good citizens to aid and sustain the authorities in this work of safety and protection and withdraw all objection to a perfect and thorough disinfection of all hitherto infected premises. GEO. A. KETCHUM, M. D.,

President Board of Health of Mobile.

Dr. Norman reports ("Register," January 27):

"We have had quite a number of refusals to allow us to disinfect houses. At one place on Conception street, where we could have done the work rapidly, there were eleven refusals. Some of the people say that they have had no yellow fever in their houses and others say that they do not want to be put to the inconvenience of closing up their rooms for four hours. * * * The Mississippi Board of Health has refused to admit new mattresses into that State without disinfection, no matter whether they come from Mobile or New Orleans. They have been prompted to do this because they have learned that in many instances mattresses have been made over with simply a new tick on them. Dr. Carter has written Dr. Norman that he is of the opinion that he can have this restriction removed, so that mattresses will be admitted upon the certification of the Marine Hospital Service."

FORMALDEHYDE GAS has proved to be such an efficient disinfectant at the hands of health authorities generally that it is surprising to read of opposition to its use by any one, and, above all, by some of the people in the Mississippi cities where yellow fever has recently prevailed. It has been abundantly shown that when the air of any place is charged with one per cent. of this gas the disinfection of all surfaces is rapid and complete; it possesses a considerable amount of penetrating power into loose fabrics, especially when they are dry, and does not affect the colors of textile materials or metallic surfaces, excepting iron and steel. The

room can be quickly cleared of the vapor by aeration, without discomfort to any one.

The most uniform and the best results from formaldehyde disinfection may be obtained by the regeneration of the gas from a 40 per cent. aqueous solution. Many forms of lamps have been designed for its use, but the best that has fallen under our observation is that described on the fourth cover of this number. All of the 40 per cent. of aldehyde gas contained in the solution is liberated by this process in its most active state with uniform and positive results.

CALIFORNIA.—C. A. Ruggles, M. D., President, Stockton; W. P. Matthews, M. D., Secretary, Sacramento.

San Francisco, 360,000. Report for December: Deaths, 568—91 under five years of age. From consumption, 84; acute pulmonary diseases, 88; from zymotic diseases, 38; diphtheria (and croup), 9; typhoid fever, 4. Annual death rate, 18.8. Contagious diseases reported during the month: Diphtheria, 56, scarlatina, 4.

Los Angeles, 103,000. Report for December: Deaths, 153. From phthisis, 30; acute pulmonary diseases, 11. Annual death rate, 15.49. "N. B.—Of the 30 deaths from pulmonary consumption 18 had lived here less than 10 years."

COLORADO.—Denver, 160,000. William P. Munn, M. D., Health Commissioner, reports for December: Deaths, 190. Of these 52 were caused by consumption, 40 contracted elsewhere; 23 by acute pulmonary diseases. Annual death rate, 14.25 (excluding phthisis contracted elsewhere), 11.25. The weather: The mean barometric pressure during the month was 24.72 inches; mean temperature, 28°; total precipitation, 0.63 inches; mean relative humidity, 53 per cent.

Colorado Springs, 22,000. B. B. Glover, M. D., Health Officer, reports for January, 22 deaths, of which 5 were under five years of age. Annual death rate, 12 per 1,000. From pneumonia, 4; from tuberculosis, 9—8 contracted elsewhere.

CONNECTICUT.—Professor William H. Brewer, Ph. D., New Haven, President; Prof. C. S. Lindsley, M. D., Secretary, New Haven. The Secretary's bulletin for January: Deaths reported, 1,153, 66 more than reported in December, and 30 than in January of last year, and 33 less than the average number of deaths in

January for the five years preceding the present; deaths under five years of age, 236.

Population, 883,192—The death rate was 15.7 for the large towns; for the small towns, 15.3, and for the whole State, 15.6. The deaths from zymotic diseases were 110, being 9.3 per cent. of the total mortality.

DISTRICT OF COLUMBIA, 276,963—88,176 colored.—Wm. C. Woodward, M. D., Health Officer, reports the mortality for five weeks ending January 29, 487. Of the decedents, 276 were white and 211 colored, the death rate being 15.5 for the white, 23.5 for the colored, and 19.5 for the whole population. The principal causes of death were: Zymotic diseases, 58; constitutional, 84; 56 were from consumption and 73 were from pneumonia. Of the zymotic class there were 16 fatal cases of diphtheria, 13 of typhoid fever, and 1 of scarlatina.

January 27.—(Special): The War Department sent to the Senate yesterday a report in relation to the filtration of the water supply of the District. This was in reply to a Senate resolution of January 10 last. It included a report by Capt. D. D. Gaillard, engineer officer in charge of the Washington Aqueduct, and a report by Surgeon General Sternberg. The actual investigation was made by Hydrographer F. H. Newell and shows that on the north branch of the Potomac River there are eighteen sawmills discharging their sawdust directly into the stream. Besides these are several tanneries pouring effluents directly into the water, and at one of these the refuse tanbark is placed where it will be washed away. Numerous mines also contribute coal dust and rain water heavily charged with iron and other mineral matter in solution. The refuse of chemicals from a paper mill at Luke, Md., amounting to 100,000 gallons per day is discharged into the water.

Surgeon General Sternberg says that evidently the water of the Potomac below the dam below Wills Creek is polluted to such an extent as to be entirely unfit for domestic use.

ILLINOIS.—L. Adelsberger, M. D., President, Waterloo; J. A. Egan, M. D., Secretary, Springfield.

Chicago, 1,619,226. A. R. Reynolds, M. D., Commissioner, reports for December: Deaths, 1,790—565 under five years of age. From diphtheria, 73; typhoid fever, 35; consumption, 168; pneumonia, 221; bronchitis, 106. Contagious diseases reported: Diphtheria, 317 cases; scarlatina, 71 cases. January 25: Typhoid on

the increase, 100 cases said to exist in the territory lying south of Garfield Boulevard between Cottage Grove Avenue, Ashland Avenue and 79th Street.

Summary for the year 1897: The total deaths from all causes reported in 1897 were 21,809, as against 23,257 in 1896—a reduction of 5.8 per cent. The principal reduction is in the deaths of infants and young children—fewer by 12 per cent. among the former, and by 12.5 per cent. among the latter, than during the previous year. There was marked diminution of deaths from the preventable diseases generally—diphtheria, typhoid fever, consumption, etc. This group numbers 6,485 deaths, as against 7,791 in 1896, a reduction of 16.8 per cent.

On the other hand, the group of diseases embracing pneumonia, cancer, heart disease and similar causes of death with which sanitary administration is as yet unable to cope—including deaths from violence—shows an increase of a little more than 3 per cent., there having been 8,057 deaths from these causes in 1897, as against 7,808 in 1896.

Fewer deaths from diphtheria, 702 all told, occurred during the year than in any other since 1884, when the population of the city was at least a million less than now. To antitoxin is ascribed the wonderful reduction in diphtheria mortality from an average of 35 per cent. prior to its introduction, to 6.6 per cent. in nearly 4,000 cases coming under the direct observation of the department.

IOWA.—E. H. Carter, M. D., President, Des Moines; J. F. Kennedy, M. D., Secretary, Des Moines.

The State Board Bulletin for January reports since preceding: Diphtheria in 21 localities; scarlatina in 11; typhoid fever in 2. The following named cities report estimated populations, total mortalities and death rates for the year ending October 1, 1897: Boone, 9,000; 89; 9.88. Burlington, 28,000; 357; 12.81. Cedar Rapids, 21,600; 207; 9.53. Clinton, 25,000; 222; 8.88. Council Bluffs, 35,000; 316; 9.27. Davenport, 35,000; 568; 16.22. Des Moines, 82,600; 648; 7.85. Dubuque, 45,000; 466; 10.35. Keokuk, 19,300; 245; 12.8. Sioux City, 37,300; 313; 8.38.

Davenport, 35,000. W. L. Allen, M. D., Physician to Board of Health, reports for December 38 deaths—10 under five years of age. Typhoid fever caused 2 deaths; consumption, 3.

LOUISIANA.—New Orleans, Feb. 1.—(Special).—The new Louisiana State Board of Health is as follows: Dr. Edmond Sou-

chon, Dr. L. F. Reynaud, Dr. Luther Sexton, Stanley O. Thomas, J. Davidson Hill, Dr. H. S. Lewis, Dr. J. J. Castellanos, John W. Castles, Jules C. Dennis.

It organized yesterday by electing Dr. Edmond Souchon President and Dr. Reynaud Vice-President, continuing Dr. Patton in the position of Secretary, and electing Drs. John Callan and Sidney Theard, respectively, Sanitary Inspector and Assistant Sanitary Inspector. The gentlemen chosen are eminently competent, capable and energetic, and enjoy public confidence.

It has been more the misfortune than the fault of the preceding board that the inviting conditions of the recent recurrence of yellow fever have been maintained for many years. On making the new appointments Governor Foster expressed his high appreciation of the service of the old Board by the following kindly letter addressed to the retiring president:

"State of Louisiana,
"Executive Department,
"Baton Rouge, Jan. 25, 1898.

"Dr. S. R. Oliphant, New Orleans, La.:

"My Dear Sir: In accepting the resignation of your colleagues and yourself, members of the State Board of Health, I desire to express to you, and through you to them, my appreciation of the valuable services rendered to the State during the prevalence of yellow fever last year by the board.

"The earnestness and zeal with which your board discharged its duties under most trying circumstances are worthy of the warmest commendation.

"Personally, as well as officially, it gives me great pleasure to testify to your conscientious and efficient administration of public office during your long tenure as president of the State Board of Health, and I beg to add that my warm personal esteem and best wishes will follow you into private life. Yours truly,

"MURPHY J. FOSTER."

However competent the Board of Health may be, and however excellent the quarantine equipment and quarantine exactions, New Orleans will never cease to be liable to the recurrence of yellow fever *so long as the filth-saturated soil remains undrained and without sewerage protection against continuous filth soakage.*

The recently organized "New Orleans Progressive Union" proposes to have a permanent exhibit of the resources and advantages of the city and State. That exhibit should be what we have here

indicated. The whilom Auxiliary Sanitary Association was of like promise with the Progressive Union, and it, too, was a spur of yellow fever. It was characterized by much public spirit—so much, indeed, that the city authorities seemed to depend upon it and were hide-bound to its urgency for soil drainage and sewerage. The city has long been "going to construct sewerage works." It is to be hoped that the combined efforts of the new Board of Health and the Progressive Union will speedily overcome the procrastination. Until this is done no exhibit of other resources will satisfy the demands of the public health.

MARYLAND.—John Morris, M. D., President, Baltimore; John S. Fulton, M. D., Secretary, Baltimore.

Baltimore, 506,398—73,344 colored.—James F. McShane, M. D., Health Commissioner, reports for December: Deaths, 704—154 less than for the corresponding month of 1896. Of these 543 were whites and 161 colored; a death rate of 15.11 per thousand for the former and 25.60 per thousand for the latter. The death rate per thousand for the whole population was 16.67; 73 died from infectious diseases, 78 from consumption, 76 from pneumonia, 16 from bronchitis, 15 from Bright's disease, 33 from nephritis, 31 from heart disease, and 17 from typhoid fever. 212 or 30.11 per cent. of the total deaths were in children under five years of age. During the month 675 cases of infectious diseases were reported, 27 more than in the preceding month. 85 deaths occurred in public institutions, of which 23 were reported as non-residents.

MASSACHUSETTS.—H. P. Walcot, M. D., Chairman, Cambridge; S. W. Abbott, M. D., Secretary, Boston.

Boston, 516,305. Samuel H. Durgin, M. D., Chairman of Board of Health. A glance backward:

Twenty-five years ago, Jan. 15, 1873, the Boston Board of Health was established. It came into existence under pressing circumstances, principally to cope with an epidemic of small-pox that had raged in Boston for about three months. As nearly as could be estimated, there were 650 cases of small-pox in the city, some of which were cared for at Gallop's Island, some at a hospital that had just been built, and others were isolated in their houses all over the city. Trade was diverted from the metropolis, and people were moving into the suburbs. In about four months there was not a case of small-pox in the city.

Not until the evil had been wiped out did the commissioners find time to open their eyes to other needs of the city, pertaining to its sanitary condition; but when the field was cleared to admit permanent improvements one great need after another became apparent. Quarantine regulations were established for vessels and immigrants; medical inspectors were appointed; the inspection of tenement houses and provisions was begun; the office of city registrar was created for the registration of births and deaths, and steps were taken in 1874 for the better ventilation of school-houses. The duties of the board were greatly increased early in the year 1875 by a city ordinance placing the cemeteries and burial places in its charge. By a persistent agitation the board succeeded in 1875 in awakening the City Council to the necessity of a change in the system of sewerage, but it was not until many years later that work was actually begun. Among the other permanent improvements due to the work of the board, one that was closely related to the system of sewerage, was the establishment, in 1879, of many public baths upon practically the same basis as they are found to-day.

The danger of the introduction of cholera into this country in 1885, while it prevailed to a great extent in other countries, awakened new energies and increased appropriations of money. Disinfection had formerly been done only after cases of small-pox, but it was now ordered to be done after many other diseases. Ideas of improvement in the sanitary condition of the city have developed into important permanent improvements, placing Boston as a model for other municipalities in many respects.

One must look upon the result in order to appreciate the worth of what the Board of Health has done during its twenty-five years of existence, and the change in the hygienic condition of Boston's population may well be considered as the chief result of the board's labor. The number of deaths in Boston from January 4, 1873, to April 25, 1874, a period of nearly seventeen months, was 10,375, out of a population of about 322,000; whereas last year, with an estimated population of 528,912, there were but 11,154. The relation of the number of deaths from preventable diseases to the total death rate tells more specifically what the result of the health officers' labors has been. Statistics show that the percentage of deaths from such diseases of the total mortality was 33.89 in 1872. This rate of percentage began to diminish with the creation of the board, but there was no marked difference until in 1885, when

it went down to 19.53. Since then it has diminished with unfailing regularity, and it was lower last year than ever, with one exception.

EXPECTORATION TRACKS, TRACKERS AND TRACTS.—The first of the expectoration tracts with which the Women's Health Protective Associations in different parts of the country are thinking of reinforcing their warfare against expectoration in public buildings, street cars, and the like, have made their appearance in Boston. They are neat little cards which invite the offender against public health and cleanliness to notice the placard forbidding expectoration. A sample card was exhibited at a meeting of the Brooklyn Women's Health Protective Association last week. The Boston member of the Health Protective, it seems, when she sees an offender in a car, has one of these small tracts ready for him, and as she is about to leave the car hands it to him and then flees from the wrath to come.

The New York Society has been talking for some time of adopting this method for bringing about a reform. The Boston Society was formed about a year ago through the influence of the New York and Brooklyn societies, whose Presidents, Mrs. Ralph Trautment and Mrs. James Scrimbeour, have each addressed the Hub health enthusiasts.

The Board of Health of Brookline has issued the following order:

"Whereas, The expectoration from persons having disease of the lungs, air passages or throat contains germs capable of communicating the disease to other persons, the Board of Health adjudges spitting in certain places to be a public nuisance, source of filth and cause of sickness, and it is therefore

"Ordered, That no person shall spit upon the floor of any public conveyance, shop, store, hall, church, schoolhouse, railroad station or other public building in said town, or upon the steps of any of said conveyances or buildings, or upon the sidewalk of any public way in said town."

MICHIGAN.—Hon. Frank Wells, President, Lansing; Henry B. Baker, M. D., Secretary, Lansing.

The Secretary reports for the month of January, 1898: Compared with the preceding month, pneumonia, pleuritis and influenza increased in area of prevalence.

For the month of January, 1898, compared with the average for January in the 12 years—1886-1897—there was a remarkable

decrease in the prevalence of consumption and a large decrease in the prevalence of remittent fever and intermittent fever.

Including reports by regular observers and others, consumption was reported present in Michigan in the month of January, 1898, at 150 places, diphtheria at 73 places, measles at 63 places, scarlet fever at 61 places, typhoid fever at 57 places, and whooping-cough at 31 places.

Reports from all sources show consumption reported at 28 places less, diphtheria at 12 places less, measles at 7 places more, scarlet fever at 11 places less, typhoid fever at 27 places less, and whooping-cough at 11 places more, in the month of January, 1898, than in the preceding month.

The total number of deaths, per "Bulletin of Vital Statistics," in January was 2,288, an increase of 183 over December. The death rate was 12.1 per 1,000 population, as compared with 11.3 for the preceding month. Such an increase is probably normal, or nearly so, for Michigan. The largest number of deaths registered from any one cause was from pneumonia, there being 291 deaths so returned. Consumption caused 209 deaths, only five more than occurred in December from this cause. Deaths from other causes were as follows: Typhoid fever, 25; diphtheria and croup, 51; scarlet fever, 12; measles, 8; whooping-cough, 11; cerebro-spinal meningitis, 29; influenza ("la grippe"), 41. The latter cause is an addition to the tables on account of its seasonal importance, and from the likelihood that Michigan may suffer again this year from its prevalence as an epidemic. For the previous months of registration ending with December, not more than 9 or 10 deaths have been reported from this cause, so that the increase to 41 for January may mean the beginning of epidemic prevalence.

The weather was warmer than usual, the temperature averaging 2.7 degrees more than the normal. As compared with previous Januarys it is the warmest since 1894. The precipitation for the State, as a whole, is somewhat greater than the normal—0.48 of an inch; by analyzing the report it shows that there was a deficiency in precipitation over the Upper Peninsula, but there is an excess as soon as the Straits are crossed, and this excess is generally increased (as compared with normal conditions) as we proceed toward the southern boundary of the State. Much of this excess is caused by the heavy snowfalls which occurred during the last ten days of the month.

Detroit, 275,000. S. P. Duffield, M. D., Health Officer, reports for the month of December 276 deaths, of which 92 were under five years of age. Annual death rate per 1,000, 11.78. From consumption, 14; diphtheria, 9; scarlatina, 1; typhoid fever, 4.

MINNESOTA.—Franklin Staples, M. D., President, Winona; H. M. Bracken, M. D., Secretary, St. Paul.

St. Paul, 215,582. A. J. Stone, M. D., Commissioner. Mortality for January, 140—26 under five years of age. Deaths from typhoid fever, 7; from diphtheria, 2; consumption, 16; pneumonia, 19. Annual death rate, 7.34.

MISSISSIPPI.—W. F. Hyer, M. D., President, Meridian; J. F. Hunter, M. D., Secretary, Jackson. After much contention about the origin of the recent epidemic of yellow fever at Ocean Springs and other Mississippi towns, the alleged Ship Island source seems to have been abandoned and a still more distant source fixed upon. A legislative committee of nine members reported February 2d:

* * * "That the yellow fever appeared first at Ocean Springs, either very late in the month of April, or early in the month of May, 1897. If we are right in this conclusion the yellow fever was introduced into Mississippi through a vessel coming from Guatemala by residents of Mississippi who had been temporarily sojourning in Guatemala.

"It was developed by our investigations that at the time the vessel referred to, namely, the Breakwater, sailed from Guatemala yellow fever was prevalent along the coast of that and other Central American States. Testimony which is to us convincing shows that there was sickness aboard that vessel on its upward trip, though we are not advised that any one was actually ill at the time when it reached the port of New Orleans. The two citizens of Mississippi above referred to, who were passengers on board ship and who had been for some time in Central America, went directly from the vessel to their homes in Ocean Springs without fumigation, carrying with them baggage that had not been disinfected. On the night of their arrival one of these parties was taken sick, and within a few days fever broke out in their immediate vicinity. From that time on fever of some character was prevalent in the town of Ocean Springs and spread with great rapidity until finally, when the prevailing disease was declared to be yellow fever and the quarantines were established, the residents of Ocean Springs were found to be practically immune; that is, nearly every person in the town had suffered from fever, leaving few to become infected.

"Inquiring into the conduct and management of the government quarantine station at Ship Island, we found that nothing could be urged either against the station or its management save rumor and fear. We were unable, after the most diligent inquiry, to find the slightest evidence to warrant a conclusion that the infection was introduced through that station. We must report that the station is efficiently managed, by officers who understand and conscientiously execute their duties. We can not find that the station as conducted is a menace either to the health or the commerce of the State. It is situated more than ten miles from the main shore. The quarantine grounds are strictly isolated and the regulations rigidly enforced."

MISSOURI.—E. L. Standlee, M. D., President, St. Louis; Paul Paquin, M. D., Secretary, St. Louis.

St. Louis, 600,000—35,000 colored. M. C. Starkloff, M. D., Commissioner of Health, reports for December: Deaths, 840—217 under five years of age; from zymotic diseases, 85; diphtheria, 42; typhoid fever, 5; phthisis, 107; pneumonia, 109. Annual death rate, 15.6.

Kansas City, 175,000. E. Von Ouast, M. D., Health Officer, reports for December: Deaths, 166—45 under five years of age. Deaths from typhoid fever, 4; phthisis, 6; tuberculosis, 10; pneumonia, 13. Annual death rate, 9.96.

NEBRASKA.—Lincoln, January 7: The State Board of Health met and reorganized yesterday by the election of the following officers: President, Dr. B. F. Bailey, Lincoln; Vice-President, Dr. O. Grothan, St. Paul; Secretary, Dr. B. F. Crummer, Omaha; Treasurer, Dr. Cummings, Seward.

NEW JERSEY.—C. F. Brackett, M. D., President, Princeton; Henry Mitchell, M. D., Secretary, Asbury Park.

Paterson, 109,076. J. L. Leal, M. D., Health Officer, reports for December: 158 deaths—42 under five years of age. Annual death rate, 14.4. Deaths from diphtheria, 5; consumption, 20; pneumonia, 16.

Trenton, Feb. 3.—An information has been filed in the Court of Chancery against the Mayor and Aldermen of the city of Paterson to restrain them from sewering into the Passaic River. The suit is instigated in the name of the State. An order has already been issued by Vice-Chancellor Stevens granting a rule to show cause why the city of Paterson shall not be restrained from enlarging its

sewerage system or continuing to use its present system to empty sewage into the river.

Newark, 230,000. Health Officer Chandler reports for the four weeks ending January 29: Deaths, 299—81 under five years of age; from diphtheria, 15; consumption, 42; pneumonia, 42; other respiratory diseases, 15. Annual death rate, 16.54.

Camden, Jan. 18.—An epidemic of diphtheria has broken out in Haddonfield and has spread so rapidly as to warrant the closing of the public schools. Several cases have already proven fatal, and notwithstanding the extraordinary precaution taken by the Board of Health to prevent the spread of the disease new cases are reported almost daily.

NEW YORK.—Daniel Lewis, M. D., President, New York; B. T. Smelzer, M. D., Secretary, Albany.

The Secretary's bulletin for the month of December, 9,160 deaths, which represent an annual death rate of 16.75 per 1,000 population, against 15.30 in November. The increase over last month is in acute respiratory diseases (by 400), which is greater than in December of last year by 100. Grippe has been reported as the cause of some deaths—that 250 deaths were due to this cause. There were 335 deaths from diphtheria, which is the smallest mortality from this cause for December in the past ten years by nearly one-half, being 200 less than that of December, 1896. Scarlet fever and measles have increased moderately, also typhoid fever. Consumption caused 1,055 deaths, which is the average for December; it caused 8 per cent. of the deaths of rural towns and 12 per cent. of those of the rest of the State. As to weather conditions, the barometer was low, the mean relative humidity high, 79%; precipitation of 3.90 inches (0.81 inches excess), there were but 5 clear days on the average for the State, westerly winds of moderate velocity prevailed, and the normal average temperature of 29° for the month.

For the year 1897 the number of deaths reported was 117,075; 3,600 less than in 1896 and the smallest mortality since 1889. The delayed returns of deaths, not reported in the Bulletin, is also smaller than usual, and the total reported mortality makes the death rate for the year about 18.50 per 1,000 population; that of the two years preceding was 19.00; of 1894, 18.75; of 1893, 19.30; of 1892, 20.78; of 1891, 21.43; and of 1890, 19.65. The saving in mortality has been chiefly in the metropolis and urban parts of the State, the rural mortality having relatively increased.

The infant mortality was lower than usual, 32.6 per cent. The zymotic mortality constituted 14.0 per cent. Grippe caused 3,000 deaths early in the year. Consumption caused 12,638 deaths, against 13,265 in 1896, 10.8 per cent. of the total mortality, it having varied in past years only from 10.6 per cent. to 11.0; about 190 deaths in 100,000 population. Acute respiratory diseases caused the same mortality as in 1896, and with other local diseases there was not marked variance from the average. The mean temperature for the year was 47°, or a little below the normal; the rain fall was 38.66 inches, the average for past years having been 38 inches. There were 122 clear days, 113 partly cloudy and 130 cloudy days; the average mean barometer for the year was 30.05.

New York City, 2,000,000. Report for December: Deaths, 3,093; 1,091 under five years. Death rate, 18.55. Zymotic diseases per 1,000, from all causes, 110; diphtheria, 109; typhoid fever, 44; scarlatina, 54; measles, 50; consumption, 401; acute lung diseases, 559.

Brooklyn, 1,100,000. Report for December: Deaths, 1,575—429 under five years. Death rate, 17.2. From zymotic diseases per 1,000, from all causes, 103,50; diphtheria, 79; typhoid fever, 24; scarlatina, 21; consumption, 211, acute lung diseases, 263.

Buffalo, 360,000. Ernest Wende, M. D., Health Commissioner, reports for January, 1898, 313 deaths, of which 94 were under five years of age. Annual death rate 10.43 per 1,000.

From consumption there were 30 deaths; diphtheria, 19; typhoid fever, 4; bronchitis, 11; pneumonia, 22.

Rochester, 170,000. G. W. Goler, M. D., Health Officer, reports for January, 1898, 174 deaths, of which 23 were under five years of age. Annual death rate, 12.04 per 1,000. Consumption caused 26 deaths; bronchitis, 4; pneumonia, 12; diphtheria, 5; typhoid fever, 1.

Albany, 100,000. Report for December: Deaths, 162—42 under five years. Death rate, 19.4. From typhoid fever, 8; diphtheria, 9; consumption, 12; acute lung diseases, 31.

Syracuse, 120,000. Report for December: Deaths, 127—32 under five years. Death rate, 12.7. From typhoid fever, 2; diphtheria, 6; consumption, 15; acute lung diseases, 25.

New York City, 3,438,899. Nathan Straus, President; W. T. Jenkins, M. D., and J. B. Cosby, M. D., Commissioners of Health; Emmons Clark, Secretary.

The Secretary reports for the week ending January 29, 1898,

1,121 deaths, of which 631 were in the Borough of Manhattan, with an annual death rate of 17.22 per 1,000; in the Borough of the Bronx there were 58, with an annual death rate of 22.08 per 1,000; in the Borough of Brooklyn there were 369, with an annual death rate of 16.08; in the Borough of Queens there were 39, with an annual death rate of 15.89 per 1,000, and in the Borough of Richmond there were 24, with an annual death rate of 19.29 per 1,000. Annual death rate for the whole city, 17.01 per 1,000.

From diphtheria and croup there were 57 deaths; measles, 24; scarlatina, 24; typhoid fever, 5; consumption, 145; other tuberculous diseases, 20; diseases of the nervous system, 113; heart disease, 72; bronchitis, 44; pneumonia, 164; other diseases of the respiratory organs, 22; diseases of digestive system, 67; diseases of urinary system, 80. The deaths under five years of age numbered 390.

Cases of infectious and contagious diseases reported were: of diphtheria, 252; measles, 485; scarlatina, 285; typhoid fever, 15; small-pox, 1; phthisis, 179.

NORTH CAROLINA.—George G. Thomas, M. D., President, Wilmington; Richard H. Lewis, M. D., Secretary, Raleigh.

The January Bulletin summarizes the mortality for December, from twenty-four towns, with an aggregate population of 126,960 —54,421 colored.

Total number of deaths, 156, of which 81 were of colored people and 32 under five years of age. Typhoid fever caused 5 deaths; malarial fever, 1; whooping-cough, 1; consumption, 17; pneumonia, 14. Annual death rates—whites, 12.5; colored, 17.7; total, 14.0.

OHIO.—S. P. Wise, M. D., President, Millersburg; C. O. Probst, M. D., Secretary, Columbus.

Report for the year ending December 31, 1896. Mortality statistics and reports are received by the State Board from cities and a few villages only, thereby making them of but little value. So far as received, reports indicate an increased prevalence of diphtheria and typhoid fever and a decrease in the number of cases of diarrhœal diseases, especially of children. During the year small-pox was reported in 16 places, with 206 cases.

In 53 cities and villages, aggregating 1,596,994 estimated population, there was a total mortality of 21,209, of which 6,376 were under five years of age. The death rate per 1,000 was 12.58. Zy-

motic diseases caused 4,189 deaths; diphtheria, 1,418; cholera infantum, 770; cerebro-spinal meningitis, 126; typhoid fever, 691; consumption, 2,376; bronchitis, 594; pneumonia, 1,592; scarlatina, 81; measles, 165.

Cincinnati, 405,000. J. M. Winthrow, M. D., Health Officer, reports for December: 474 deaths—123 under five years of age. Annual death rate, 14.04. From consumption, 58; pneumonia, 64; bronchitis, 26; zymotic diseases, 54; diphtheria, 16; typhoid fever, 11.

Cleveland, 350,000. J. L. Hess, M. D., Health Officer, reports for the month of December: Deaths, 432—130 under five years. From diphtheria, 15; typhoid fever, 5; consumption, 16; tuberculosis, 20; pneumonia, 59; bronchitis, 13. Death rate, 14.81.

PENNSYLVANIA.—Pemberton Dudley, M. D., President, Philadelphia; Benjamin Lee, M. D., Secretary, Philadelphia.

Philadelphia, 1,240,266. Benjamin Lee, M. D., Health Officer, reports for the four weeks ending January 29: Deaths, 2,343—716 under five years of age. From diphtheria, 152; typhoid fever, 74; consumption, 247; pneumonia, 327; scarlatina, 13. Annual death rate per 1,000, 19.6.

TYPHOID FEVER.—At a meeting of the Water Committee of Councils, February 10, there was a delegation of physicians from the various medical societies of the city, with a view to such action by the public authorities as will purify the water supply and stay the progress of typhoid fever. Dr. S. Solis-Cohen, of the County Medical Society, briefly stated the object of the delegation and submitted a general statement of the committee's views. * * * "Basing an estimate upon the statistics of the Board of Health for the ten years ending December 31, 1897, which show the total mortality from typhoid fever in Philadelphia during that time to have been somewhat over 5,000 deaths, representing about 50,000 cases of sickness, and estimating the pecuniary loss from each death to have been $1,000, and from each case of sickness to have been $100, the citizens of Philadelphia have in that time suffered a money loss which could have been absolutely prevented by filtration of the water of some $10,000,000. This would not only have paid for filtering the water supply, but would also have spared all this disease and death."

Dr. John K. Mitchell, of the College of Physicians and Surgeons, endorsed Dr. Cohen's statement and referred to the experi-

ence of various cities in the purification of the water supply. Lawrence, Mass., reduced its rate of typhoid 59 per cent. in twelve months by the introduction of a filter plant. In Vienna, where river water was used, the introduction of pure water reduced the typhoid rate from 13 deaths in 10,000 people to 2.

Dr. A. C. Abbott, City Bacteriologist, cited the death rate from typhoid fever in ten cities in Europe having filtered water as 8.6 persons in 100,000, while in fourteen cities of the United States, viz., Philadelphia, Atlanta, Grand Rapids, Cincinnati, Albany, Troy, Jersey City, Pittsburg, Lowell, Camden, Louisville, Washington, Alexandria and Cairo, receiving a polluted supply, the rates are between 32 in Philadelphia and over 100 in Cairo, with an average of 45 per 100,000 for the fourteen cities.

February 3.—(Special).—Dr. Benjamin Lee, Secretary of the State Board of Health and of the State Quarantine Board, was yesterday appointed Health Officer of Philadelphia by Governor Hastings, to fill the vacancy caused by the resignation of Theodore Stulb. This appointment is eminently encouraging to the otherwise disgraceful need of a competent executive of the Philadelphia Board of Health. Dr. Lee has been so long and so favorably known as one of the most accomplished practical sanitarians in the country that he requires no eulogium by the SANITARIAN; he is well known to all of its readers. That he has been recognized by Governor Hastings as an executive force for the redemption of Philadelphia is alike complimentary to the Governor as to himself.

Pittsburg, 285,000. Report for the five weeks ending January 29: Deaths, 469—174 under five years of age; typhoid fever, 28; consumption, 34; diphtheria, 11. Death rate, 16.6.

SOUTH CAROLINA.—Charleston, 65,165—white, 28,870; colored, 36,295. H. B. Horlbeck, M. D., Health Officer, reports for five weeks ending January 29: Deaths, 167—115 colored. Under five years of age, 46. Annual death rate—white, 18.6; colored, 32.8—25.7.

TENNESSEE.—W. J. McMurray, M. D., President, Nashville; J. A. Albright, M. D., Secretary, Somerville.

Nashville, Jan. 27.—The Secretary of the State Board has appealed to the Marine Hospital Service to keep small-pox out of the State! "This is not," he says, "in any way a request to aid us in

taking care of our own small-pox, but a memorial from our board to you to keep it out, or do whatever is in your power in that direction."

Memphis, 64,134—27,561 colored. M. Haase, M. D., Secretary, reports for December, 100 deaths, of which 46 were colored, and 15 under five years of age. Annual death rate—white, 22.5; colored, 20.0; total, 21.3. Typhoid fever caused 4 deaths; consumption, 9; pneumonia, 19.

Chattanooga, Feb. 2.—The City and County Boards of Health met in joint session yesterday morning to consider an official report of two cases of small-pox discovered in the city, and resolved that vaccination is hereby made compulsory, in accordance with the city ordinance and rules of the joint Board of Health.

UTAH.—Salt Lake City, 48,076. P. S. Keogh, M. D., Commissioner. Report for December: 33 deaths, of which 8 were under five years of age. Annual death rate per 1,000, 5.65. From zymotic diseases, 1; consumption, 5.

VIRGINIA.—Jan. 20.—The Council Committee on Retrenchment met a few days ago to hear arguments on the restriction of household water supply, by the use of metres, which were contended for "from the standpoint of cleanliness and from the standpoint of revenue!" An ad libitum supply of pure water is one of the first principles of sanitary economy in all of its aspects. The need of it, or its too economical use, is promotive of dirt, disease and death.

WASHINGTON.—Seattle, 70,000.—Clarence A. Smith, M. D., Health Officer and Secretary, reports for January 49 deaths. Annual death rate per 1,000, 8.40. Deaths from consumption, 6; pneumonia, 5; typhoid fever, 3.

WEST VIRGINIA.—Wheeling, Jan. 21.—Typhoid fever is epidemic in Bridgeport. It is not confined to any one district, but is general in every part of the town.

WYOMING.—Laramie, Jan. 10.—Diphtheria is prevailing extensively. In so much that the Boards of Health and Education have required all the public schools to be closed. Several of the school teachers as well as many pupils are down with it.

MORTALITY STATISTICS ABROAD FOR THE FOURTH QUARTER, 1897.

Population, total mortality, annual death-rate per 1,000, and deaths from typhoid fever, diphtheria, acute lung diseases and consumption.

London, 4,463,169; 21,619; 19.4; 237; 722; 4,664; 2,086. Glasgow, 714,919; 3,676; 20.6; 45; 53; 916; —. Liverpool, 633,078; 3,617; 22.8; 76; 43; —; —. Manchester, 534,299; 2,695; 20.2; 39; 17; —; —. Birmingham, 505,772; 2,620; 20.7; 26; 34; —; —. Leeds, 409,472; 2,132; 25.7; 40; 30; —; —. Sheffield, 351,848; 1,821; 20.7; 46; 11; —; —. Dublin, 349,594; 2,143; 24.5; 103; 29; 392; 242. Edinburgh, 292,364; 1,412; 19.3; 13; 20; 278; 121. Belfast, 281,431; 1,577; 22.4; 104; 14; 423; 197. Nottingham, 232,934; 1,000; 17.2; 14; 7; —; —. Bristol, 232,242; 1,011; 17.4; 34; 8; —; —. Bradford, 231,260; 926; 16.0; 12; 3; —; —. Hull, 225,045; 921; 16.4; 20; 5; —; —. Newcastle, 247,555; 984; 18.1; 11; 9; —; —. Salford, 213,190; 1,006; 18.9; 20; 9; —; —. Leicester, 203,599; 809: 15.9; 14; 28; —; —. Portsmouth, 182,585; 661; 14.5; 9; 11; —; —. Cardiff, 170,063; 566; 13.3; 9; 39; —; —. Brighton, 121,401; 432; 14.2; 7; 2; —; —. Norwich, 110,154; 573; 20.8; 12; 4; —; —. Plymouth, 97,658; 408; 16.7; 2; 9; —; —. Luxembourg, 19,845; 65; 13.0; —; 1; 6; 9. Amsterdam, 495,683; 1,461; 11.8; 25; 43; —; —. Rotterdam, 288,863; 1,237; 17.1; 17; 14; —; —. La Hague, 191,529; 731; 15.3; 1; 12; —; —. Paris, 2,511,629; 11,611; 18.5; 61; 78; 1,597; 2,362. Lyons, 466,767; 2,074; 17.8; 24; 8; 311; 287. Lille, 216,276; 1,058; 19.6; 2; 5; 177; 159. Saint-Etienne, 135,784; 777; 22.9; 16; 2; 161; 86. Nantes, 125,757; 694; 22.1; 8; —; 58; 132. Roubaix, 124,447; 622; 20.0; 10; 4; 118; 68. Le Havre, 119,470; 713; 23.9; 9; 4; 80; 168. Reims, 108,943; 585; 21.6; 3; 5; 90; 72. Nancy, 96,306; 432; 17.9; —; 1; 46; 75. Besancon, 57,556; 312; 21.7; 4; 3; 43; 42. Dunkerque, 39,718; 202; 20.3; —; —; 37; 35. Pau, 33,012; 183; 22.2; 2; —; 26; 19. Brussels, 531,011; 2,116; 15.9; 22; 4; 382; 281. Berlin, 1,708,499; 6,775; 15.9; 28; 209; 677; 888. Hambourg, 644,780; 2,347; 44.6; 43; 22; 299; 286. Munich, 418,000; 2,498; 23.9; —; 67; 315; 282. Leipzig, 413,529; 1,714; 16.6; 8; 33; 173; 217; Breslau, 367,769; 2,059; 22.4; 10; 34; 213; 320. Dresden, 347,485; 1,552; 17.9; 4; 24; 194; 202. Cologne, 331,000; 1,528; 18.5; 6; 38; 181; 162. Frankfort, 244,889; 974; 15.9; 4; 8; 123; 157. Hanover, 220,644; 749; 13.6; 5; 14; 100; 72. Dusseldorf, 185,911; 738; 15.9; 3; 9; 111; 58. Nuremberg, 168,654; 778;

18.5; —; 11; 94; 153. Chemnitz, 168,004; 860; 20.5; 3; 39; 33; 85. Altona, 150,747; 542; 14.4; 3; 7; 65; 60. Charlottenbourg, 149,958; 542; 14.5; 1; 20; 98; 54. Stettin, 148,481; 753; 20.3; 14; 27; 113; 70. Stuttgart, 146,661; 518; 14.1; 1; 8; 52; 54. Bremen, 145,385; 553; 15.2; 3; 6; 61; 64. Elberfeld, 143,593; 552; 15.4; 1; 6; 105; 62. Strasbourg, 139,443; 627; 18.0; 4; 22; 88; 63. Barmen, 130,428; 512; 15.7; 2; 11; 106; 58. Dantzig, 127,272; 752; 23.6; 12; 39; 94; 64. Halle, 121,024; 567; 18.7; 4; 28; 81; 43. Brunswick, 119,600; 453; 15.2; 1; 4; 60; 52. Aix-la-Chapelle, 112,793; 552; 19.6; 1; 6; 89; 65. Crefeld, 107,837; 497; 18.4; —; 11; 60; 60. Mannheim, 101,857; 379; 14.9; 1; 7; 64; 44. Essen, 101,644; 474; 18.7; 3; 11; 99; 59. Mayence, 77,643; 319; 16.4; 1; 4; 43; 55. Metz, 59,674; 231, 15.5; 6; 2; 36; 33. Vienna, 1,542,294; 7,382; 19.1; 30; 159; 1,120; 1,307. Buda-Pesth, 592,528; 3,150; 21.3; 49; 46; 455; 483. Prague et faub, 369,494; 1,650; 17.9; 28; 23; 151; 290. Triest, 162,606; 954; 23.5; 23; 22; 118; 161. Lemberg, 138,298; 948; 27.4; 10; 26; 139; 161. Gratz, 121,616; 749; 24.6; 4; 11; 50; 120. Brunn, 101,935; 584; 22.9; 3; 21; 55; 99. Gracovie, 81,400; 665; 32.7; 20; 28; 100; 111. Pilsen, 57,324; 249; 17.4; 1; 2; 31; 29. Linz, 51,599; 437; 33.9; 11; 11; 20; 73. Copenhagen, 333,714; 1,305; 16.6; 7; 32; 87; 175. Stockholm, 267,100; 1,050; 15.7; 9; 31; 129; 151. Gothembourg, 116,000; 408; 14.1; 3; 12; 43; 85. Christiana, 192,141; 676; 14.1; 4; 11; 90; 108. Helsingfors, 76,276; 303; 15.9; 3; 2; 42; 58. St. Petersburg, 1,267,023; 6,334; 20.0; 266; 514; 186; 987. Moscow, 988,610; 5,726; 23.2; 128; 213; 180; 782. Warsaw, 614,752; 3,095; 20.1; 33; 94; 554; 365. Odessa, 404,651; 2,057; 20.3; 71; 51; —; 230. Venice, 163,254; 809; 19.8; 14; 24; 131; 68. Bilbao, 66,956; 567; 33.9; 13; 8; 424; 69. Bucharest, 206,000; 1,747; 33.9; 147; 39; 234; 193. Jassy, 80,959; 546; 27.0; 14; 30; 48.

For the second quarter, 1897.

Berne, 48,328; 243; 20.0; —; 4; 37; 38. Bale, 78,860; 341; 17.3; 1; 5; 30; 66. Geneva, 80,111; 341; 17.0; 4; 2; 28; 58. Lausanne, 36,619; 143; 15.6; 1; 3; 15; 24. Zurich, 126,497; 587; 18.6; 5; 10; 44; 87. Chaux-de-Fonds, 31,173; 138; 17.7; —; 1; 10; 18. Debreczin, 61,648; 487; 31.6; 2; 4; —; 72. Presbourg, 58,078; 573; 39.5; 4; 3; —; 85. Le Caire, 353,188; 4,452; 50.4; 69; 1,100; 292. Alexandria, 181,703; 2,729; 60.1; 12; 11; 557; 205. Damiette, 43,502; 376; 34.6; 5; —; 67; 23. Suez et Ismailia, 12,406; 246; 79.3; 3; 8; 49; 7. Port Said, 10,693; 226; 85.3; —; —; 66; 11.

For the third quarter, 1897.

Utrecht, 96,349; 389; 16.1; 2; 3; 33; 28. Groeningue, 62,295; 248; 15.9; —; —; 29; 32. Maestricht, 33,834; 228; 27.0; —; —; 17; 19. Bordeaux, 252,102; 1,244; 19.3; 14; 9; 87; 142. Roubaix, 124,447; 620; 19.9; 6; 4; 53; 65. Rouen, 112,657; 781; 27.7; 8; 3; 47; 96. Nice, 108,227; 419; 15.5; 21; 1; 41; 50. Berne, 48,328; 225; 20.3; —; 2; 16; 20. Bale, 78,860; 330; 16.7; 4; 5; 7; 36. Geneva, 80,111; 319; 15.9; —; 2; 9; 55. Lausanne, 36,619; 157; 17.1; 3; 2; 7; 19. Zurich, 126,497; 534; 16.9; 5; 10; 27; 64. Chaux-de-Fonds, 31,173; 112; 14.4; —; 3; 5; 13. Buda-Pesth, 592,528; 3,329; 19.1; 24; 35; 315; 486. Helsingfors, 76,276; 328; 17.2; 3; 1; 50; 65. Rome, 476,917; 1,802; 15.1; 29; 2; 172; 213. Milan, 458,405; 1,985; 17.3; 132; 41; 295; 203. Turin, 344,203; 1,105; 12.8; 23; 4; 64; 139. Genoa, 211,151; 990; 18.7; 32; 8; 107; 106. Florence, 194,613; 875; 18.0; 31; 6; 84; 104. Venice, 163,254; 717; 17.6; 19; 4; 52; 79. Brescia, 69,928; 412; 23.6; 2; 3; 44; —. Lisbon, 298,903; 2,043; 27.3; 33; 13; 165; 280. Porto, 139,856; 1,318; 37.7; 25; 6; 94; 141. Jassy, 80,959; 588; 29.1; 15; 26; 23; 65. Buenos Ayres, 715,052; 3,497; 19.6; 29; 727; 369. Mexico, 344,377; 4,259; 49.5; 171; 7; 565; 399. Montevideo, 244,839; 1,056; 17.3; 11; 8; 201; 124.

THE RUSSIAN CENSUS OF 1897.

John Karel, Consul-General at St. Petersburg, reports that (Consular Reports, 204) the first general census of the population of the Russian Empire was carried out very successfully in the time specified by the principal census commission. It must be remembered that it is more difficult to take a general census of Russia than of any other country on the globe, owing to the extensive territory, the hardships of the climatic conditions in winter, the shortness of the winter days, and the great diversity in education of the inhabitants. Furthermore, the rural population is generally illiterate, and the work of preparing and answering the required questions on the blanks had to be done exclusively by the census takers, instead of by the peasants themselves. When, under such conditions, the work has been done in three months, the management should receive credit. An army of over 150,000 census gatherers and officials were employed, under the direction of the different managers of the census districts and census establishments.

According to this census of 1897, the population of the whole

Russian Empire, as now published, is 129,211,113, of which there are 64,616,280 males and 64,594,833 females.

This census shows 19 cities containing over 100,000 inhabitants each, 35 cities from 50,000 to 100,000, 69 cities from 25,000 to 50,000, 13 cities from 10,000 to 25,000, and 3 cities from 5,000 to 10,000.

The most compact population is centered on the narrow strip formed by the governments of Podolia, the chernoziom part of Volyn, the larger part of Kiev and Poltava, the chernoziom part of Chernigov, the nonsteppe chernoziom parts of Kharkov and Voronezsh, and the chernoziom parts of Orel, Tambov, Riazan and Tula. The collected data show further that the population of Russia during the last thirty-five years has not only increased, but has also made great progress in the way of advanced civilization.

SOME OLD PEOPLE.—A recent issue of the London "Lancet," in view of Mr. Gladstone's eighty-eighth birthday, December 29, 1897, gives a list of old people, with their ages, who are still active in the affairs of life. The "Lancet's" list, when published, was headed by the Right Hon. C. P. Villiers, the venerable member of Parliament, who died a few weeks ago at ninety-six. The rest are as follows:

Mr. T. Sidney Cooper	94	Lady Burdett-Coutts	83
Dr. James Martineau	92	Lord Cranbrook	83
Earl of Mansfield	91	Lord Bridport	83
Earl of Perth	90	Sir James Paget	83
Ald. Sir Henry Keppel	88	Sir John B. Lawes	83
Mr. Glaisher	88	Sir Richard Moon	82
Sir Thomas Acland	88	Lord Masham	82
Mr. Gladstone	88	Earl Fitzwilliam	82
Lord Armstrong	87	Sir J. Mowbray, M. P.	82
Pope Leo XIII	87	Lord Esher	82
Duke of Northumberland	87	Bismarck	82
Lord Gwydyr	87	Lord Grimthorpe	81
Sir George Grey	85	Bishop of Liverpool	81
Dr. Samuel Smiles	85	Sir Richard Quain	81
Mr. Henry Russell	85	Sir Charles Gavan Duffy	81
Sir Henry Bessemer	84	Sir Henry Hawkins	80
Verdi	84		

Of all the English Prime Ministers of the last two centuries, Mr. Gladstone has attained the greatest age. Lord Palmerston, in

fact, is the only premier besides Mr. Gladstone who became, while in office, an octogenarian, and he died when nearing his eighty-second year. In point of age, too, whether in or out of office, Mr. Gladstone easily takes the lead. Lord Sidmouth (Henry Addington) died when eighty-seven, and Earl Russell was eighty-six when he succumbed—about ten years after resigning the premiership. The Duke of Wellington lived to eighty-two, and, with Earl Grey, who died out of office at the age of eighty-one, the list of Prime Ministers who lived to be octogenarians is exhausted. Of other notable statesmen, Lord Beaconsfield died at seventy-seven, Chatham at seventy, Walpole at sixty-nine, Peel at sixty-two, Lord North at sixty, Canning and Lord Liverpool at fifty-eight, Fox at fifty-seven, and Pitt at forty-seven. The four occasions on which Mr. Gladstone held the highest office under the crown amount to a period of nearly thirteen years, which, however, does not form a record. Walpole was premier for twenty-two years, Pitt for about twenty years, and Lord Liverpool for about fifteen years.

BOOK REVIEWS.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA. Forty-fourth annual meeting, 1897.

The meeting was called at Moorhead, June 8, 1897, President P. L. Murphy, M. D., in the chair.

Among the many interesting and valuable papers presented were the following: "A Few Hints in Medico-Social Ethics," by C. O. Langhinghouse, M. D.; "Report on Pathology and Microscopy," by J. W. White, M. D.; "When to Operate," by J. C. Rodman, M. D.; "The Surgical Treatment of Hemorrhoids," by J. M. Parrott, M. D.; "The Ideal Antepyretic," by E. G. Goodman, M. D.; "The Keystone of the Medical Arch," by T. S. McMullan, M. D.; "Diagnosis of Continued Fever," by H. A. Royster, A. B., M. D.; "The Microscope in Diagnosis of Malaria," by R. H. Whitehead, M. D.; "Law *vs.* Justice," by G. T. Sikes, M. D.; "Diphtheria Antitoxin," by J. M. Flippin, M. D. The Secretary of the State Board of Health, R. H. Lewis, M. D., submits a concise report of the present status of sanitation in the State and refers to the forthcoming Biennial Report for a report of the full work of the board for the past fiscal year.

GOUT, RHEUMATISM AND ALLIED AFFECTIONS. 1'p. 48. E. L. Gros, M. D., of the Faculty of Paris. Translated from the French.

A brochure of the evolution of theories in regard to gout and rheumatism, dwelling especially on the modern appreciation of the subject, and the results of recent experience in the use of "colchicine salicylate."

CONTEMPORARY LITERATURE.

THE ESSENTIALS OF LIFE.

It is a recognized law in biology that "function precedes structure." To define this law more exactly, we should say that function precedes the differentiation of the organ on which it depends. There is a certain work to be done, and a certain body of cells are set apart sooner or later to do it. Just as plowing was done in some fashion before the invention of the plow, so in some manner respiration was accomplished before the development of gills and lungs. Something of mental action came before there was ever an organized brain.

In the animals of one cell, or protozoa, breathing and digestion are each performed by the whole body. In the division of labor or specialization which arises in the higher or many-celled animals, certain alliances of cells or tissues are set apart for respiration alone, and certain others for digestion, while other functions of animal life are relegated to still other cell alliances. Each organ in turn is released from all functions except its own.

Irritability, or the response to external stimulus, is an attribute of all living organisms. In the method and degree of response variations occur. These variations favorable to the division of labor and the adaptation of the animal to its surroundings are seized and fixed by natural selection. In this way, on the basis of a diffused function, an organ is built up and the organ itself is specialized and perfected.

The mind and consciousness of man grow out from the irritability of the lower animals. They are developed through series of successive differentiations and integrations. All the higher animals are colonies of co-operating and co-ordinated cells. In such colonies of units the functions of sensation, thought and motion

are relegated to series of the most sensitive and most highly organized cells. This alliance of cells is adequate for the work it has to perform. The brain is always adequate for the mind, for the one is the organ, the other the function, and the development of the two must go on together.—From "The Evolution of the Mind," by David Starr Jordan, in "Appletons' Popular Science Monthly" for February.

MUSCOGEE'S FEDERAL PRISON.

Under the heading, "A National Disgrace," Dr. F. H. Wines, secretary of the Illinois State Board of Charities, contributes to the "Charities Review" a realistic account of a visit to the United States jail at Muscogee, Indian Territory. The jail at Muscogee is leased by the United States from a private firm. Dr. Wines found it overcrowded and unsanitary. It lacked proper ventilation, sewerage and water supply. The structure is so shaky that the convicts could easily escape were it not for the armed guards who keep watch over them. There are no cells, but the prisoners associate together in idleness day and night. There is assembled together a heterogeneous mass of convicted and unconvicted felons and misdemeanants—whites, Indians and negroes, of all ages—with no attempt at classification or separation. This prison at Muscogee, as described by Dr. Wines, certainly is a national disgrace and a reproach to the nation to permit the continued existence in federal prisons of such conditions as are described by Dr. Wines.

TEMPERANCE A PHYSIOLOGICAL NECESSITY.—In like manner the influence of all drugs which affect the nervous system must be in the direction of disintegration. The healthy mind stands in clear and normal relations with Nature. It feels pain as pain. It feels action as pleasure. The drug which conceals pain or gives false pleasure does not exist, forces a lie upon the nervous system. The drug which disposes to reverie rather than to work, which makes us feel well when we are not well, destroys the sanity of life. All stimulants, narcotics, tonics, which affect the nervous system in whatever way, reduce the truthfulness of sensation, thought and action. Toward insanity all such influences lead; and their effect, slight though it be, is of the same nature as mania. The man who would see clearly, think truthfully, and act effectively, must avoid them all. Emergency aside, he can not safely force upon his nervous system even the smallest falsehood. And here lies the

one great unanswerable argument for total abstinence; not abstinence from alcohol alone, but from all nerve poisons and emotional excesses.—From "The Evolution of the Mind," by David S. Jordan, in "Appletons' Popular Science Monthly" for February.

HUMAN NATURE IN THE STEERAGE.—H. Phelps Whitmarsh writes of "The Steerage of To-Day" in the February "Century." Mr. Whitmarsh, who crossed the ocean in the steerage himself, says: To me the most noticeable thing about the life was the ease with which the yoke of civilization was thrown off. If conditions be favorable, I opine that a large proportion of the steerage passengers throw back to their Darwinian ancestry about the third day out. Away from home, country and religious influences, unrestrained by custom and conventionality, bound by no laws of action, and separated from all that force of opinion so strong in the world ashore, they let themselves go, and allow their baser natures to run riot. No sooner has the seasickness left them than they growl and snarl over their food like dogs, scrambling for the choice pieces, and running off to their bunks with them; they grow quarrelsome; their talk is lewd and insulting; brute strength is in the ascendant; and, without shame, both sexes show the animal side of their natures. But most apparent and obnoxious are the filthy habits into which many of them fall. The sea seems utterly to demoralize them. Some of them will remain for days in their births, where, without changing their clothes, they eat, sleep, and are sick with the utmost impartiality, and without the blessing of soap and water. Hence the steerage as a whole, the "married quarters" (where there were children) in particular, was ill-smelling and otherwise objectionable.

FREE TRAVELING LIBRARIES.—For many years Mr. Melvil Dewey, director of the New York State Library, has advocated a scheme of State distribution of books by way of loan to institutions and to groups of taxpayers on payment of a nominal fee. His plan includes a system of central control and supervision under which small collections of popular books are to be sent from point to point, kept in charge of responsible persons, and circulated freely among the residents of each locality. The State of New York made an appropriation for such a system of library loaning in 1892, and has appropriated annually since. In the first year 46 libraries were sent out; in the second, 139; in the

third, 212; in the fourth, 371; and in the fifth year, 447. Books have been purchased to supply the constantly increasing demand, until now there are nearly 36,000 volumes owned by the State and available for this purpose.—From "The Traveling Library—A Boon for American Country Readers," by Wm. B. Shaw, in "American Monthly Review of Reviews" for February.

WASTEFUL WESTERN RIVERS.—"Queer American Rivers" is the title of an article in February "St. Nicholas," written by Mr. Spearman. The author says of Western rivers:

All the rivers of the plains are alike full of yellow mud, because the soil of the plains melts at the touch of water. These are our spendthrift rivers, full to the banks at times, but most of the year desperately in need of water. It is only with the greatest effort that they can keep their places in the summer; there is just a scanty thread of water strung along a great, rambling bed of sand, to restrain Dame Nature from revoking their licenses to run and turning them into cattle-ranches.

No wonder that respectable fish refuse to have anything to do with such streams, and refuse tempting offers of free worms, free transportation, and protection from the fatal nets. Fancy trying to raise a family of little fish, and not knowing one day where water is coming from the next!

Not but that there is water enough at times; only, those rivers of the great plains, like the Platte and the Kansas and the Arkansas, are so wasteful of their supply in the spring that by July they are gasping for a shower. So, part of the year they revel in luxury and during the rest they go shabby—like shiftless people.

THE NORTH AMERICAN REVIEW for February opens with an article on "America's Interests in China" from the pen of General James H. Wilson. A brilliant and witty essay follows, entitled, "A Comparative View of the Woman Suffrage Movement," by Frances M. Abbott. A. F. Weber, Assistant Registrar of Cornell University, interestingly treats of the co-operative credit societies so popular on the continent of Europe. "Is Our Educational System Top-Heavy?" thoughtfully asks Elliott Flower, while the Hon. Charles S. Fairchild, formerly Secretary of the United States Treasury, deals with "The Monetary Commission and Its Work" in a paper of national import. The recurrence of the anniversary of the birthday of Abraham Lincoln lends timeli-

ness to the reminiscences of "Lincoln's Skill as a Lawyer," indulged in by James L. King, State Librarian of Kansas. Among the short articles are: "The Consumers' Label," by Mrs. Maud Nathan; "Wane of Narcotic Inebriety in America," by J. B. Mattison, M. D., and "An Appeal to Womanhood," by Edith Roberts.

IN THE AMERICAN MONTHLY REVIEW OF REVIEWS for February Mr. Walter Wellman gives a valuable summary of the achievements thus far made in arctic exploration and of plans now maturing for the immediate future—including Mr. Wellman's own expedition projected for the years 1898-99. This is followed by a collection of opinions on the value of polar discovery from such experts as Dr. Nansen, General Greely and Commodore Melville, and from several eminent scientific men.

WATERWORKS IN PANAMA.—Consul-General Vifquain writes from Panama under date of July 20, 1897:

I beg to report that the department of Panama has signed a contract with Messrs. Emile Lebon and Belisaire Marenovich, of Brussels, Belgium, for the construction of waterworks in this city. The contract was signed June 29, 1897, and the contractors are to assume actual charge of the works within six months from that date. The capital stock of the company is to be $1,000,000 (gold). The water is to be brought by pipes from the Juan Diaz River, 15 miles from this city. This water is excellent, coming from the mountains. All plans and studies have been completed, and a great deal of actual work has been done in the construction of roads, bridges, dams, etc. All this work was done under the direction of the government, and the same is for the account of the contracting company. The contractors have a period of two and a half years from June 29 to have the waterworks completed and the city furnished throughout with water. The importance of this enterprise cannot be realized. Water used here now comes either from the roofs of houses or from bad wells, and is very unwholesome and causes much sickness. The sewerage of this city also dates back to the time of the Spaniards, and is little better than no sewerage at all, being stopped up at many places, hence resulting in bad odors throughout the streets. Waterworks, with good drinking water, proper sewers and drainage, will result in a vast improvement in the healthfulness of this city. The laying of the pipes in the streets, involving opening the ancient

sewers, together with the customary bad effects of excavating in this country, will probably cause an epidemic of yellow fever.

FIREPROOF FABRICS.—To render fabrics fireproof, take 16 pounds pure ammonium sulphate, 5 pounds pure ammonium carbonate, 6 pounds boracic acid, 4 pounds pure borax, 4 pounds starch or 4-5 pound dexterine or gelatine, 200 pounds of water. Into this liquid the fabrics are dipped at 86° F., so that they are well saturated; then they are wrung out lightly and sufficiently dried for ironing. The quantity of the starch or the dexterine and gelatine may be changed according to the degree of stiffness the stuffs are to possess. One quart of the liquid will impregnate about fifteen square yards of stuff.—Färber Zeitung.

HYGIENE FOR TOURISTS IN FRANCE.—Dr. G. Morice, of Paris, has written a little book on the above subject. He points out the needs of travelers both on the train and at the hotel or auberge, emphasizing cleanliness as the great desideratum. But most important of all, the latrine accommodation should be above reproach. At present the filthiness of hotel privies in France is for the most part excessive. So much so, indeed, that in their "Revue" the Touring Club have commenced what they call "La Croisade des W. C." "First nation in the world for touring, roads and climate," says Dr. Morice in conclusion, "we are not yet within measurable distance of the English, the Americans, or even the Swiss, as regards ordinary comforts in our retiring closets. Then put your shoulders to the wheel, French landlords, and by paying a little attention to hygiene enable your 'Golden Lions' and your 'White Horses' to at length earn the respect of their patrons." According to an anonymous writer on the same subject the people who expectorate promiscuously in railway carriages, omnibuses, etc., are the chief offenders against decency and sanitation. Until women are allowed to dispense with skirts and appear uncriticised in rational costume, says this bold hygienist, they must, when making use of public vehicles, continue exposed to the risk of soiling their petticoats with most offensive and dangerous filth. On a journey, women, he says, are generally encumbered with babies and parcels, and it thus becomes impossible for them to attend properly to their drapery when about to take their seats.—Journal American Medical Association.

THE MOUTH AS A MONEY PURSE.—Not long ago a dirty colored urchin, with a red rag around her neck, betokening throat trouble, was noticed on a street car, and, as is so often the case with members of this race, she held her nickel for her fare in her mouth. This nickel was given to the conductor. A lady on the opposite side of the car handed the conductor a dime, and he gave her in change the nickel he had received from the negro child. The woman, having some difficulty in reaching her purse in an out-of-way pocket, to free both hands, placed the nickel between her own sweet lips, to our horror and disgust. On another occasion a negro woman was seen to take a silver piece from her mouth and lay it on the marble slab of the scales on which a steak which she had purchased had been weighed. A delicately dressed lady, who was the next purchaser, had the piece of meat she bought placed on the same scales. There would be no danger here on account of the heat used in cooking the meat, but had the lady been more observing she would scarcely have relished the roast.

It is a common thing to see children put money into their mouths. Seeing that babies make their acquaintance with the world by putting everything they can get hold of into their mouths, the danger may not be very great. There is some reason to believe that saliva has antiseptic properties. But one may readily conceive how diphtheria and other diseases, where the exchange from mouth to mouth has been made before the germs have been killed by drying, might easily be conveyed in this manner. It is a most disgusting and dirty practice, to say the least, and mothers should carefully teach their children never to put money in their mouths. Money in bank is much better.—Dr. Probst, Ohio State Board of Health Bulletin.

A RARE COLLECTION OF FOREIGN BODIES IN THE STOMACH.—Frickner (Deutsche medicinische Wochenschrift, 1897, No. 4; Centralblatt fur Chirurgie, July 31, 1897) relates the case of an hysterical woman, thirty-two years old, who, several months after having swallowed a variety of articles with suicidal intent, began to suffer with severe digestive disturbances, vomiting, etc., and finally with a tender lump in the left side of the belly. Laparotomy was performed, and the incision opened an abscess near the stomach. Then the stomach was opened and a large collection of the most varied articles was found, among them a key, two tea-

spoons, a silver fork, wire tacks, hairpins, pieces of glass, etc., in all, thirty-seven pieces, weighing more than eight ounces. The most difficult to remove was the fork, the prongs of which were directed toward the pylorus. The gastric incision was closed with sutures, and an iodoform-gauze tampon was placed in the abdominal incision. Healing and recovery were rapid. Frickner has looked up the literature of the subject, and he finds that in only three out of fifty-three cases was more than one foreign body found. His own case makes fifty-four in which an operation was performed, and forty-four of the patients recovered. On the whole, the prognosis seems tolerably good.—N. Y. Medical Journal.

THE LIVING AGE issues for January show that the spirit of its founder still lives: but they show more. Their contents are gleaned from a wider field, and there is an up-to-dateness in the articles which evidence renewed life and vigor. The recent enlargement of the magazine, the addition of new departments, the widening of its scope by the introduction of translations from prominent Continental authors on topics of present interest, and the presentation of American literature are evidences of enterprise that will be appreciated by its readers and furnish what was needed to make "The Living Age" a complete compendium of the world's best current literature.

The publishers' offer of the eight numbers of 1897, containing the opening chapters of the serial "With All Her Heart," free to all new subscribers for the year 1898, still holds good. Send $6.00 to "The Living Age" Co., Boston, and receive the benefit of this offer. In no other way can so much reading matter of equal quality and variety be obtained.

THE MONTHLY CYCLOPÆDIA OF PRACTICAL MEDICINE replaces the "Universal Medical Journal." Good reasons are given for this change, rendering it more adaptable to the "Annual of the Universal Medical Sciences" (the first volume of the forthcoming series to be out shortly), to which it is a tender. Edited by C. E. de M. Sajous, M. D. Price of the "Journal," separate, $5.00 per annum. The F. A. Davis Publishing Co., Philadelphia.

DR. H. C. WOOD, Professor of Therapeutics in the University of Pennsylvania, has assumed editorial charge of the "American

Medico Surgical Bulletin." Dr. R. G. Eggles will remain as managing editor—a combination well calculated to promote the excellence of the "Bulletin."

PUBLICATIONS RECEIVED.

The Plumbing, Water Supply and Drainage of Hospitals. W. P. Gerhard, C. E. Reprint from the Albany Medical Annals.

What Inferences May Be Drawn from Cases of Pulmonary Tuberculosis Reported to Have Originated in Colorado? S. G. Bonney, A. M., M. D. Reprint from the "Boston Medical and Surgical Journal."

Circular on the Prevention of Tuberculosis. Issued by the Board of Health, Brookline, Mass.

Have We Found a Radical Cure for Inginnæ Hernia? W. B. De Garmo, M. O. Reprint from the "Charlotte Medical Journal."

The Erie County System of Placing Dependent Children in Families. Report of Commissioner Letchworth to the State Board of Charities of New York.

Orthogenesis and the Impotence of Natural Selection in Species-Formation. T. Eimer. Open Court Publishing Co., Chicago.

Physical Training in Public Schools. Report of the Director. Washington, D. C.

Vocal Hygiene. T. F. Rumbold, M. D. St. Louis, Mo.

Functions of the Tensor Tympani and Stapedius Muscles. T. F. Rumbold, M. D. St. Louis, Mo.

Thomas F. Rumbold, M. D. Biographical Sketch.

Uric Acid Diathesis. C. F. Craig, M. D. Reprint from the N. E. Medical Monthly.

A New Curette and Evacuator. E. D. St. Cyr, Jr., M. D., Chicago.

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THE PROPER DISPOSAL OF SEWAGE.*

BY C. E. GRUNSKY, C. E.

Sanitary Boards are directly concerned in those problems which relate to the maintenance of dense population on relatively small areas without undue menace to health and comfort. Not least among these problems are those which deal with the disposal of waste of all kinds.

The collection and disposal of sewage, a class of refuse and waste, diluted with water, is to be briefly noticed in this paper.

It seems to be generally accepted that water carriage of sewage proper, including excrement from the human body, offers the simplest and best means for a collection of this material, and it is not necessary to now reopen a discussion of the question whether it does or does not, particularly as the same never became an important issue with us. But it is well to remember that the question of dry or wet treatment was discussed with some acrimony in Europe, and that there are still many, even large cities, such as Glasgow and others, in which much of the fecal matter is collected in special receptacles and carted away at night.

It will suffice to say that water carriage is with us almost universally introduced just as soon as the water supply will justify the process.

Sewage, then, is the water carried waste from the human body, from the kitchen sinks, from industrial establishments and the like, and this, as in the case of other offal or waste, such as garbage, should be collected and disposed of in some way that shall not only

*Paper read at the recent Convention of Health Officers in San Francisco.

render it harmless, but that shall give the least possible offense, not only to the community producing it, but to its neighbors as well.

The quantity of sewage proper produced in any town or city, or in any selected district of any city, is limited. It is generally determinable, with a fair degree of approximation, from the water supply of which a large proportion after use in cleaning the human body, the utensils in and the surroundings of our establishments and homes, becomes the carrier of the waste.

The degree of dilution is not always the same; it depends upon local conditions, not least of which is the water supply, and it varies somewhat for the different times of the day. But these are all minor matters of comparatively small import when compared with the two main questions to be answered in connection with the sewage problem presented by every populous district: "How shall sewage be disposed of?" "How shall sewage be collected?"

The disposal of sewage should be such that there will be the least possible danger of disseminating or propagating disease germs and that the least possible offense will be given to the senses.

A delivery into the ocean, provided winds and currents are such as to prevent the fouling of the beaches and of low flat areas, is entirely unobjectionable; but in the nature of things very few cities are so situated that sewage can thus be disposed of.

The delivery into rivers, no matter what their volume of flow, nor how dilute the sewage, should be considered only a temporary expedient. Such delivery is always to be considered a fouling of waters, which should be kept as pure as possible. This method of disposal is particularly objectionable when the river is a source of water supply for communities below the point at which the sewage is discharged into them. Nor should the fact that the State itself thus disposes of the refuse of some of its institutions—as at the Folsom State Prison—be held to justify other localities in treating the use of the river as a sewage recipient, otherwise than as a mere temporary arrangement, to be modified as soon as sewage increases in volume sufficiently to make the fouling perceptible to the senses, or as soon as demanded by any locality whose water supply may thereby be contaminated.

Marysville, on demand of Sacramento, should be compelled to dispose of its sewage otherwise than by dumping it into the Yuba River; the State on like demand should modify its system of sewage delivery into the American River at Folsom; Stockton and

Sacramento should be restrained from pumping sewage into the San Joaquin and Sacramento Rivers on demand of any resident on the river banks below these cities.

But if this restrained, then what?

This question of what to do with sewage in cases where its delivery into rivers is objectionable and no other place of outfall seems available, has provoked most careful inquiry and has received careful consideration by many scientific boards. It has occasioned much discussion, and has led to remarkable and most welcome progress in sanitary science. The Rivers Pollution Commissions of England and the Massachusetts State Board of Health have been foremost in making the necessary scientific investigations, and it is through their efforts that a clear understanding has been reached of what it is necessary to do to accomplish the desired end.

In the first place, it seems clearly established that a mere dilution of sewage such as results when it is delivered into a river of large flow, does not destroy disease germs. It merely disseminates or scatters them through the greater volumes of water. And even when the partial oxidation of organic matter in flowing water is conceded, there still remains good ground for objecting to this means of disposal.

The first "Rivers Pollution Commission" of England was appointed in 1865, and in its reports emphasized the fact that purification of flowing water occurs only in exceptional cases, and that sewage cannot be discharged into any stream or its tributaries without menace to the health of those using its waters.

As the practice of discharging waste from industrial establishments of all kinds, as well as crude sewage, into rivers had become very general in England, this conclusion was not accepted without opposition, an opposition which undoubtedly came largely from those who did not wish to be burdened with the additional expense that would be put upon them if they were denied the privilege of dumping their refuse into the rivers.

The appointment of a second commission became necessary, which says, in one of its reports: "A very large proportion of the running waters of Great Britain are either at present dangerous (to health) or are rapidly becoming so." "When the sewage of towns or other polluting organic matter is discharged into running water the suspended matters may be more or less completely removed by subsidence and filtration, but the foul organic matters

in solution are very persistent." "There is no river in the United Kingdom long enough to secure the oxidation and destruction of any sewage which may be discharged into it even at its source."

The conviction that water, once fouled, could not be purified by any method led at least one prominent sanitarian to the conclusion some years ago that water for domestic use should not be drawn from rivers at all, for it seemed hopeless to him to cut off all sources of possible contamination, even though crude sewage were carefully excluded.

By chemical treatment, often advocated, and as represented by numerous processes, it is possible to free the sewage of a portion of its organic matter. The amount thus removed in actual practice rarely reaches one-half; it is generally only from one-fourth to one-third. The processes employed are varied, both as regards the chemicals employed and the method of handling the sewage. Sulphate of iron or sulphate of aluminum, together with lime, are the substances most frequently employed to produce chemical precipitation. The settling tanks are generally arranged either for intermittent or constant service. In the latter case, now generally preferred, they are narrow—usually about thirty feet wide—and long, sometimes 600 to 1,000 feet. The sludge removed from those used for the treatment of London sewage, after concentration in secondary tanks, contains 90 per cent. of moisture.

No practical chemical treatment has yet been discovered which does not leave considerable suspended organic matter in the effluent, and about all that can be said in its favor is that it effects a reduction of the amount of such matter and very often prevents fouling of a stream to that degree which renders it apparent to the senses. There seems to be no justification for turning the effluent from chemical precipitation works into a stream which is to be drawn upon as a source of water supply.

Chemical treatment produces a sediment or sludge of so little manurial value that it is difficult to dispose of the same even in England, where the value of manure is fully appreciated.

There are, however, cases where this treatment is justifiable. Its advocates some years ago secured its adoption by London, but the system as applied to that metropolis has not escaped unfavorable criticism. The sludge formed in the London settling tanks is carried fifty miles to sea in specially constructed barges. The effluent flows into the Thames.

Once the conclusion was reached that neither by dilution with water nor by chemical treatment could sewage be made harmless, special attention was devoted to experiments with filters, and the work was so thoroughly done that the problem of their successful use, not alone in the matter of sewage purification, but also in connection with water supply for domestic purposes, has been solved. These experiments, as conducted in our country under the immediate personal supervision of H. F. Mills, of the Massachusetts State Board of Health, have attracted the attention of physicians and sanitarians in all parts of the world, and the conclusions reached are being verified wherever properly established filtration systems are made a part of sewage disposal works.

Without entering into detail, it may briefly be stated that in the upper layers of a manure filter—and it does not seem to make much difference what the nature of the material composing the filter is—the organic substances in sewage, all carbonaceous and nitrogenous substances which are subject to putrefaction and decay, are changed into harmless compounds. This change is largely due to chemical action facilitated by micro-organisms that have, not inaptly, been called "friendly microbes."

The action of a new filter does not become fully established until its upper layers are thoroughly colonized with these micro-organisms. Such colonization, however, takes place naturally and easily as a direct result of the application of sewage to a filter. Filtration not only reduces the carbonaceous and nitrogenous substances, but of the 500,000 to 3,000,000 bacteria per cubic centimeter in the sewage, very few are found in the effluent, or better stated, the few found in the effluent are principally harmless varieties.

Furthermore, it was found that filters are practically permanent; that they do not require renewal; that an occasional raking of the surface layers is sufficient to prevent clogging, but that aeration to be secured either by intermittent use or by forcing air through the filters to the material to be filtered is necessary.

Much other information of practical value was collected in connection with these studies and investigations in Massachusetts, but as it has been fully published, it need not be further alluded to here.

The conclusion has been reached that the use of filter beds on a large scale, for the treatment of the sewage of interior cities and towns, and the delivery of the effluent, if any, into natural water

courses is an entirely satisfactory and unobjectionable method of treatment. Moreover, practical experience has demonstrated that these conclusions are sound.

Berlin may be cited to illustrate this fact. The sewage of that city, 30,000,000 gallons per twenty-four hours, is collected at twelve pumping stations, each of which receives the sewage of one of the twelve districts into which the city is divided, and is by the pumps sent from six to twelve miles in pipes, some toward the north and some toward the south, to the sewage farms, of which the combined area now in service is 11,000 acres. The sewage is delivered at the high points of these farms and flows thence in open earthwork ditches to the tracts of land prepared to receive it.

These tracts are planted in cereals, in grasses (timothy and Italian and rye grass), vegetables, trees, osiers and other cultures, and are thoroughly underdrained. Soil drains are 16 to 30 feet apart and 3 to 4 feet deep. Cereals receive no irrigation with sewage after sprouting. Grasses are irrigated by broadcast flooding, the sewage being generally allowed to first pass through broad, shallow trenches intended to intercept, to some extent, the suspended matter. The sludge thus intercepted, after being sun-dried, is ready for use as a fertilizer. The details of the management of these extensive sewage farms offer a great deal of interest, but cannot be discussed at this time; but this reference to the Berlin sewage farms is important, for the reason that they are a success. The effluent is clear, inoffensive and harmless. Fish thrive in a pond filled with it, established for experimental purposes. It does not become foul in its flow through a natural channel to the river Spree, and does not in any sense foul the waters of that river. The managers of the farms and their families are domiciled on the farms, so are all the assistants and laborers. They form a population of nearly 1,600, and, according to careful statistics, preserved since 1885, the farms are remarkably free from zymotic diseases and are otherwise exceptionally healthful.

These results are particularly noteworthy, because the establishment of the first sewage farm in 1874, to the northward of Berlin, met with violent opposition. Complaints were numerous of damage done by overflowing sewage, and of offensive smells, and even led to the action by the State prohibiting the further use of the sewage on the farm; but as a result of the investigation which followed, improved methods and management were recommended

and operations were allowed to be resumed with highly gratifying results. Not only is the sewage satisfactorily and thoroughly purified by filtration on the selected tracts, but the farming operations yield a profit.

Allen Hazen, in a recent paper read before the Boston Society of Civil Engineers, in speaking of the possibility of so purifying sewage that its discharges into lakes or rivers which are sources of domestic supply will not be a menace to health, says:

"Years ago, before the germ theory of disease was established, the possibility of purifying sewage in this way would hardly have been admitted, but thanks to the more recent German and English investigations, as well as to the experiments of the Massachusetts State Board of Health, it is now well known that it is entirely possible to accomplish this through the wonderful purifying power of sandy soil under proper conditions; and it is actually a fact that the effluents from certain European sewage works, as well as from some of the purification fields in Massachusetts, are preferable, from a hygienic standpoint, to the public water supplies of a number of large American cities."

Berlin is somewhat remote from California to be cited as an example worthy of imitation in the matter of sewage disposal, but it is one of those where the success of the method seems to go unchallenged, and where the method employed, as will readily suggest itself, is one that should receive some consideration whenever it is necessary to determine how to dispose of the sewage of any of our interior towns.

The soil of the sewage farms near Berlin is a sand or sandy loam, but other soils have elsewhere been successfully used in the same way. Even in California, examples can be cited where sewage has been applied for many years to adobe land without giving the least offense.

Paris sewage, to the extent that lands for irrigation have been made available, is pumped from the sewer main upon these lands and the rest is discharged into the river Seine. Until quite recently less than one-fourth of the sewage of that city was put on the land for treatment. The rest accomplished very thoroughly the fouling of the river Seine. It is understood that to the original 2,000 acres of land prepared to receive sewage, 25,000 more are to be or have already been added; and it is hoped that the same change in the condition and appearance of the Seine will be the result as has been recorded for the Spree at Berlin, which is

now entirely inoffensive, and which, before sewage was purified, was almost as black and filthy as our own open waterway on Channel Street.

Again, quoting from Mr. Hazen's paper:

"The German cities as a rule are situated upon much larger rivers than the English cities, and sewage disposal has not been so pressing a problem with them; but, on the other hand, the conditions for disposing of the sewage upon land are much more favorable than in England, and the expense of carrying out the process is less; and now that the process has been demonstrated by many years' trial by the three cities, Berlin, Dantzig and Breslau, to be a practical success, the Imperial Board of Health, which has great power in these matters, is insisting on the adoption of sewage purification in almost all cases where important extensions or changes in the sewerage systems are adopted. As everywhere else it is difficult to prevent a city which has been discharging its sewage into a river from continuing to do so, particularly where the river is large enough so that no great nuisance is caused. But when a city wishes to extend its sewerage system or increase the size of its sewers and the project is sent to Berlin for examination and approval, then the board can take the position that the sewage should be purified, and it generally does so."

In this State there is comparatively little sewage irrigation, and so far as known, none receiving that careful attention which is necessary to make the treatment of sewage for the purpose of completely destroying disease germs, which it may contain, an unquestioned success.

At Los Angeles the sewer main leads direct to an outfall into the ocean, but along its course sewage may be had for irrigation by any one desiring to so use it. Only a part of the city's sewage is now so used. The aggregate area irrigated near Los Angeles is about 3,700 acres.

At Pasadena about one-half of a sewage farm of 300 acres is irrigated with sewage.

At Fresno the sewage is spread upon land five or six miles to the westward of that city; so also at Redding a sewage farm has been established.

In connection with every local sewage problem this question of disposal must be considered, and enough has been said to indicate that no fear need be entertained that the question cannot be satisfactorily answered. It is generally assumed that, depending upon

character of soils and subsoils, from 200 to 500 acres per 1,000,000 gallons of sewage in 24 hours are necessary to successfully dispose of it when used for irrigation. But these figures are based upon experience in the East and in Europe, and should only be considered of value as indicating the result of the experience in a much more severe climate than that of this coast. The rate at which sewage may here be applied to land with satisfactory results remains yet to be determined.

Elsewhere than in California, and the exception might almost be restricted to San Francisco, it would seem almost superfluous to say anything about the collection of sewage, but we have grown to accept as an established fact and as a necessary evil a lack of system in this matter and a haphazard method of procedure that is really beyond comprehension. This statement applies with full force to this city in a much less degree to our other principal centres of population, and under the circumstances it may not be amiss to say a few words on this subject.

Water carriage of fecal matter with other waste being accepted as an established condition, it becomes necessary to so construct the conduits as not to poison the air we breathe or the soil under foot. It becomes necessary, too, to determine whether the conduits for the sewage are to be made large enough for rain water as well, or whether they are to carry only sewage proper. Here again local conditions must be well considered. It is sometimes possible to send rainwater over the surface of the streets in open gutterways to an outfall, but often this cannot be done for the reason that its volume becomes too great. It must then be put into subsurface channels, which not infrequently are almost co-extensive with the conduit system for sewage proper. The economy so often claimed for the separate system of sewerage rarely exists; on the contrary, when any storm water conduits are necessary, they, in conjunction with the sewers proper, may generally be assumed to cost more than sewers for the combined flow of sewage and storm water.

It must be apparent at once that a city located like Alameda, which sheds water, like a duck's back, toward both sides, can well be sewered on the separate system without the use of any storm water sewers, while in many portions of San Francisco the choice lies only between either a combined sewer or two complete conduit systems, one for sewage and one for storm water only.

Conduits for storm water only are not common in California, and they are not, under ordinary circumstances, desirable, because they would be practically out of service for long time periods and would be extremely difficult to keep in a satisfactory sanitary condition; they may be fully as objectionable as large sewers adapted to storm water flow and usually charged with a flow representing only a small fraction of their capacity.

The leaning of sanitary engineers at the present time seems to be toward small sewers on the combined system, with relief outlets for excessive storm waters.

No inflexible rules can be laid down as to the best system of collection, but the system should be determined in each case by topographical features, climatic conditions and the like, not uninfluenced by the predetermined method of disposal, as well, that which may be adopted as a temporary expedient, as also that which is ultimately to be adopted.

Whether collected in separate conduits, or by any other system, the sewage once delivered into conduits must be carried to the outfall point. Ordinarily this is accomplished in whole or in part by gravity flow. The conduits unite with each other until finally the entire flow from a district—which, under certain favorable topographical conditions, may embrace an entire town or city—is in a single main. Often the flow of a series of main sewers is received into what might be termed an intercepting sewer.

Sewers are usually constructed along street lines, and this fact is to be taken into consideration in establishing street grades. The sewers are generally so designed that the sewage flows with sufficient velocity to reach the outfall point in so short a time as not to become putrescent, and to keep deposits from accumulating along the lines of sewers.

All this seems simple enough, and when sewers are thus constructed it would seem an easy matter to secure a proper ventilation and thorough flushing, and to establish adequate systems of traps to prevent a flow of noxious gases from the sewers into dwellings.

But these simple principles are occasionally ignored to an extent surpassing belief, as illustrated in this city, in which about one-fourth of the population of the State, a population large enough to justify extreme sanitary precautions, is compressed into an area of about 10,000 acres, which is traversed in all directions by conduits built without system and reeking with filth.

For forty years sewers have here been constructed without regard to volume of sewage to be disposed of. Their size seems to have been determined rather by the value of the abutting property, which was assessed to pay for them, than by the requirements of drainage. They do not form part of a system. There is not even an attempt, except in a few outlying districts, to effect the gradual convergence to main lines, but down-hill and up-hill throughout the length of each street the sewers extend, cutting through each other at every street intersection, and making it absolutely impossible to outline the districts which are tributary to the mains. Furthermore, there is a complete disregard of the fact that the sewage conduits should be built on proper gradients.

The conduits are supposed to be placed ten feet below street surface—an absurd requirement. Those descending steep hills lose their grade suddenly at each point where they flow sixty to eighty feet from one side to the other of cross streets. Then they pitch down to the next street, where, possibly, the outlet from a sewer—big in the crossing only—is one to two feet above the entering sewer on the other side of the street.

Elongated pools of reeking, putrescent filth are thus formed and lie scattered throughout the most populous parts of the city. Such sewers cannot be flushed out nor kept clean in any other way than by being in large part reconstructed. This is not an overdrawn statement, and it is not the first time that it has been made; but no apology is needed for repeating it. The foul condition of our bay frontage, where our sewers terminate from block to block as they happen to reach the water line, is known to everybody. The open waterway of Channel Street, as a former health officer, Dr. Henry Gibbons, in 1874, put it, "Smells to heaven with a loudness and persistence that the strongest nostrils may not withstand, and the disenfectants of a metropolis could not remove."

The useless storm water inlets and catch basins—15 per cent. of which, in the heart of the city, are on gutter summits where no water can reach them—bring the evidence of the condition of the sewers to our sense of smell at every street corner, and serve to illustrate the absurdities that have been incorporated into the local sewerage works.

Our winds are our salvation—without them the effect of the filth accumulations but a few feet below the street surface would be still more apparent in the disease records of this city. The hope, however, is justified that when due regard is had, by the municipality

as well as by the individuals, to the advice and mandates of well-informed and progressive boards of health, that an efficient sewer system will result, which, aided by the natural climatic advantages of this city, will completely banish zymotic disease.

SEWAGE CONSUMPTION IN NEW JERSEY.

By Samuel Phillips,

President Passaic Valley Mutual Protective Association.

To the Inhabitants of the Passaic Valley:

Your attention is called to the proceedings in the Court of Chancery for the purpose of enjoining the further pollution of the Passaic River. This suit is the most important of any that has ever come before the courts in this State, and is of special interest, not only to the "complainants," but to every resident and non-resident property owner along the Passaic River, as well as the municipal corporations that may possibly be compelled, sooner or later, to "pay the penalty of prosperity, probably at large expense, in new and improved plans, for the preservation of the health and comfort of the inhabitants."

The plan suggested for the disposal of sewage by the Passaic Valley Sewage Commission is based on the highest sanitary authority that the State could command, and is no doubt the wisest, the cheapest and the best system that can possibly be devised for the disposal of the sewage of the Passaic Valley.

Unless the present Legislature should provide some measure for putting that system in force and operation, we may safely conclude that no further effort will be made at present to provide any other system or means for the disposal of sewage than the Passaic River.

Paterson, apparently, is the only city that has thus far offered any serious objection to the trunk sewer system, and, in self-defense, sets up the claim that if the Dundee Dam were removed and the East Jersey Water Company compelled to return to the river its full and natural volume of water, that the river would once more become clean and pure and the present nuisance would also be effectively and permanently abated.

The absurdity of all such reasoning lies in the fact that the removal of the dam would not only involve great expense, but the greater danger of creating an epidemic in the immediate vicinity would cause alarm and prevent any steps being taken in that matter under any consideration whatever. The removal of Dundee Dam and the return of the full and natural volume of water would not purify the river even to the extent of removing the nuisance, as long as 70,000,000 gallons of sewage, with other polluted matter, is daily emptied therein.

The foul, sickening and offensive odors arising from the lake during heavy freshets, and especially during the heavy storm flow the past week, is sufficient to convince the residents along the river, who are supposed to know something about such matters, that no amount of water will purify the river in its present condition until the sewage is removed.

Private corporations have no more right to divert natural streams than municipalities and others have to pollute them; and there is no reason whatever why the Court of Chancery should not be asked to enjoin the diversion of the Passaic River as well as the pollution. Both remedies are necessary and indispensable to the final redemption and purification of the river and perfectly in harmony with the rules and principles of justice and equity in all such matters. "The full volume of water" should be returned to the Passaic River and the sewage and other polluting and offensive matter enjoined for the purpose of restoring to the riparian owners along the stream their rights to its natural flow undiminished and unpolluted; and there should be no further delay in taking joint proceedings in the Court of Chancery for that purpose. There is now no occasion for any further discussion over the pollution and diversion of the Passaic River. We are now on the eve of revolution, the legal contest has already commenced, and the time for discussion and agitation has passed.

To trifle any further with these matters and delay action is to take a terrible risk of epidemic outbreaks of diseases, such as arise from sewage-polluted waters and infected atmospheres. The preliminary step recently taken in the Court of Chancery on the part of the Passaic Valley Protective Association, and others, to enjoin Passaic River pollution, originated from an honest motive and with a righteous purpose, and with a firm determination to prosecute the case if necessary until an ultimate decision is reached.

SHOULD PROTECT HOMES.

If the proceedings in the courts are likely to be delayed for any considerable length of time, it would be wise for the inhabitants along the valley to take lawful and proper measures in the meantime to protect their homes from any further danger to health and destruction to property.

The situation is a very serious one for the residents along the banks of the river to consider, for the reason that if the Court of Chancery were to grant an injunction at once, sufficient time would no doubt be allowed to provide a remedy, even if the remedy were ready at hand. In any event, considerable time must necessarily be required for that purpose.

Meantime, there is no reason whatever why residents and riparian owners along the river should be compelled to take a terrible risk to life and still further damage to property without proper and sufficient compensation to enable them to provide healthful and comfortable homes elsewhere. I see no reason why the riparian owners should allow any further use of their property for a natural sewer to the extent of making it a public nuisance.

As long as the residents along the river allow the free use of their property for the sole purpose of making it a natural sewer to the extent of becoming a public nuisance, they can rest assured that there will not be any other means provided. The complainants in the suit claim that municipalities have no right to take private property for natural sewers without consent or compensation. If the courts should ultimately decide that municipalities have a right to sewer in the Passaic River, it would establish a precedent for other States as well as New Jersey.

If the courts should further decide that the municipalities along the Passaic River have a lawful right to take and use the property of every riparian owner along the river without their consent and without lawful condemnation and just compensation, it would create a precedent that New Jersey alone has a preferred claim under the Constitution exceeding the right of any other State in the Union, and also exceeding the right of the United States Government under the law of eminent domain.

Under the provisions of the United States Constitution, private property cannot be taken without compensation. In that event it would be necessary to amend the United States Constitution before such a decision could be reached in the courts. The preservation of the public health and the public safety are the two

branches of government, and when the provisions of the Constitution that guarantee these rights to American citizens become "null and void," the United States Government will probably "cease to exist." The writer has no fear of such a result ever being reached through any decision of the courts.

It is manifest that the greatest growth of population and manufacturing industry is along the valley and hills that border such streams as the Passaic and other rivers throughout the State; and the lands bordering such rivers are generally chosen as the sites for beautiful residences and useful manufacture, and heretofore have yielded large revenues to the State.

FACTS SHOULD BE MADE PUBLIC.

If it is lawful to use our rivers and natural streams as natural sewers to such an extent as to become public nuisances, seriously endangering the public health and damaging property; if the riparian rights of property owners along such streams can be taken by municipal corporations without consent and without compensation for such purposes, then such facts should be made public through the courts, to such an extent that the wayfaring man, though a fool, shall not err therein.

As I have stated before, it is not likely that such a decision will ever be reached. The principle objection to trunk sewer system thus far has been the "enormous expense." It would be well for those who have become alarmed over the question of expense to pause and consider seriously the enormous expense involved in the use of the Passaic River as a "natural sewer."

The writer begs to submit, in this connection, the following carefully prepared statements from the bill recently filed in chancery by the Passaic Valley Mutual Protective Association:

"The Attorney-General and your orators charge that the Mayor and Aldermen of the city of Paterson have no power or authority to construct any sewers so as to discharge into the waters of the Passaic River above the riparian lands of your orators, and above the said water plant of your orators, the Mayor and Aldermen of the city of Jersey City, the sewage of the said city, or the materials usually discharged through sewers; that other means of disposing of said sewage have been recommended by scientific official authority, as hereafter stated, and that your orators are entitled to the flow of the water through the said river, in its natural state, free from corruption or impurity, and that your orators have a

property in the said river as it flows, as above described; that it is one of the essential elements of their said property in the said river that the waters thereof should be pure and wholesome and free from any contamination by reason of any sewage discharged from any house or building, place or places in the said city of Paterson; and that your orators can only be deprived of this right of property in the said river by their own consent or by lawful condemnation and proper compensation paid therefor; and that the Mayor and Aldermen of the city of Paterson have not by compensation or agreement with your orators, or any of them, obtained the right to construct sewers which will empty into said river, and have not obtained the right in any way whatever to pollute the said river or in any way to deprive your orators of their said property in said river.

"The area of the Passaic Valley affected by the river pollution embraces 81 square miles, and is inhabited by a population of about 500,000 inhabitants, and the assessed valuation of the property therein is $230,000,000, and the actual valuation of said property is much in excess of such sum, and the health of said half-million people residing in said valley is seriously endangered by said pollution of said stream by such sewage, and will be further endangered by the increase of such discharges. The city of Jersey City and other communities using or entitled to use the said Passaic River as a source of water supply have a population of upwards of 250,000 inhabitants, and the health of upwards of 750,000 people is endangered by said pollution, and the Mayor and Aldermen of Jersey City, by reason of said pollution, were compelled in the year of 1895 to enter into a temporary contract for a water supply to take the place of such supply at Belleville, on the Passaic River, at a cost of over $1,000 per day."

From the foregoing paragraph it will be seen at a glance that if the Passaic River is to be continued any longer as a natural sewer, it will involve litigation of the most serious character. The magnanimous spirit in which the riparian owners have allowed their rights to be encroached upon should cause the aggressors to be very thankful that this is the first effort that has been honestly and earnestly made for the demand of their rights in the courts.

When their claims are properly and equitably adjusted in the amount of property that has been actually damaged or affected through the public nuisance caused by river pollution, the expense of continuing the Passaic River as a natural sewer will be found to be very far in excess of any artificial system that could possibly

be devised, and must inevitably bankrupt every municipality along the Passaic River and ultimately depopulate the entire Passaic Valley, and possibly extend its ravages even still further, for the murderous bacillus knows no State lines. The Asiatic cholera could find no better breeding bed than along the valley of the Passaic.

When we understand that an area that contains eighty-one square miles must under such conditions soon become uninhabitable and eventually become almost entirely depopulated, we will find that the loss of revenue to the State will be a matter for very serious consideration, as well as the local issues involved in the rights of private owners along the river.

Our association has no direct interest whatever in any special plan for the disposal of sewage. Paterson and every other municipality along the river have the right to use any lawful means they may choose to adopt; but we want it distinctly understood that we do not consider the Passaic River is the sole and exclusive property of these municipalities or that it can be used any longer as a natural sewer without consent or lawful condemnation, and proper compensation paid therefor to other riparian owners along the stream who require the use of the water for other lawful purposes.—From the Newark Advertiser, March 1, 1898.

INQUEST ON THE PHILADELPHIA MUNICIPAL COUNCIL.

At a recent mass meeting of prominent citizens of Philadelphia the chairman declared the purpose of the meeting was:

"To express determination that in this city of homes 'of the people,' government 'by the people and for the people,' shall not perish. The people shall not be sacrificed either to municipal neglect or to advance the selfish interest of the Schuylkill Valley Water Company or of any other like scheme. The text of the speakers who address you this evening will be the people's demand for the immediate appropriation of $3,700,000 and the commencement, without delay, of the erection of filter plants for the purification of our water supply under the direct ownership and management of the city, and in no other way.

"You all know that for many years this city has suffered from a polluted water supply. You also know that this dirty and un-

wholesome water may be both cleansed and purified by filtration. As to this there is no question or doubt. What you don't know is why your city authorities condemn you to continued discomfort, disease and death. You do not know why the time of Councils should be occupied with every description of iniquitous private water scheme, and even special meetings called for their consideration, to the utter neglect of any effort whatever to give you the comfort and safety in your homes that are your just dues and so easily attainable. You want intelligent action and not excuses."

Judge Ashman was introduced by the chairman. He began by speaking of the great variety of decoctions supplied from the Schuylkill, which the citizens of Philadelphia are compelled to drink. "The remedy," he said, "lies with the Councils. They are a very upright body of men and mean well, but you know a certain unmentionable place is said to be paved with good intentions; but a pavement of good intentions is not a very substantial foundation for a reservoir that is made to hold water, and that is the sort of pavement upon which the Queen Lane Reservoir rests. I understand it is artistic in proportions, beautiful to the eye, and I was going to say pleasant to the smell, but I draw the line right there. It has large storage capacity, but the one thing it will not hold is water. It was tried as an experiment some time ago to test its use in that respect, and the contents of one of our large sewers were pumped into it, and the result was that the sewage remained and the water run out, and you and I drink that mixed drink, containing the essence of dead cats and all other abominations that abound in a sewer. The consequence was that an epidemic was started. An estimable young lady who a few weeks ago was in full health, who drank this mixed drink peculiar to Philadelphia, died, and the clergyman who spoke at the funeral said this was a mysterious visitation of Providence. He was mistaken; it was a visitation of the Councils of Philadelphia.

"I know there are a great many good men there, but I do not believe they ought to be confounded with Providence. It is a slander upon Providence to say that this visitation is from heaven; it comes from a lower place. This is not a question of economy; it is a question of death.

"The remedy is palpable. At this very moment we are confronted with a statement that I am almost afraid to make in a civilized audience, and that is, a purposed delay in this matter of

providing filtration, which is the system recommended by a majority of the physicians and scientists, and that delay is adopted as a scheme, as a motive by which to press the claims of those who tell us that the city is unable to bring the legitimate fruition from this system, and that it ought to pass into the hands of a private enterprise.

"That is trifling with death, and a member of Councils, I do not care who he may be, who identifies himself with a scheme like this ought to be tried, and, if convicted, ought to be hanged for murder [great applause], for there is every element of murder in the first degree. That is the story which has gone out to blast the fame of Philadelphia. If there were anything very incorrect in the remedy proposed some excuse might be given for the delay; but the system of filtration is as old as the hills in Europe; $3,700,000 would complete that plan; and I say that a Councilman who would tolerate delay in a moment like this, when his fellow-citizens are falling by scores by the lack of that remedy, ought not to occupy a place in this city outside the penitentiary. I call it to the attention of the governing powers of this city that the court is open; it is always in session and has no vacation; a court that stands above the loftiest tribunal of the Government, and that is the people. That is the court before which to bring this indictment. We will furnish our witnesses and place in the dock some, at least, of our criminals, and we are going to get a verdict." [Great applause.]

Rabbi Krauskopf, who was next introduced, began his remarks with a reference to the old adage, "Never put off until to-morrow what must, shall and can be done to-day." He said that he was in the city of Hamburg shortly after the terrible epidemic of cholera there, in conference with some of its ablest people, and learned that a thorough cleansing of the water would have saved the city from that scourge which cost 9,000 lives. That the city authorities kept putting it off until it brought suffering and misery upon tens of thousands of its people. There were warnings sufficient. One or two suspicious deaths occurred and the attention of the city authorities was called to them. But they slept on unconcerned about the great enemy which had taken possession of their city. Between the 1st and 20th of August there were 83 deaths; on the 21st there were 86 deaths; on the 22d there were 100; on the 23d, 200 deaths, and before the week closed there were 1,000 deaths.

"We are told that we have an epidemic of typhoid in this city. I, for one, am not ready to hold the City Council solely responsible for it. I am one of the men of Philadelphia who are responsible, and every man and woman in our city is equally responsible for it. We are the people, and if we the people want pure water, we the people can have it. [Tremendous applause.]

"The people make dynasties and the people unmake them; the people make kings and the people unmake kings; the people make Councils and the people can unmake them. [Applause.] It is the duty of every preacher, when he performs the last sad rites over the body of one of his flock who has fallen a victim to this epidemic, to say this person has been murdered—literally murdered.

"We brag so very much about all the things that we have done to prolong life and ward off sickness; we talk of sanitary plumbing and health officers; we wash and scrub our asphalt streets, and we pour it all into the river, and then we swallow it down at one gulp. If you want pure water, go and get it. You can have it if you want it."

William Waterall, the next speaker, who has been an untiring worker in the cause of filtration, was loudly applauded as he advanced to the front of the platform. He spoke of the difficulty of awakening the people to a knowledge of their danger from the impure water supply. "It is time," he said, "that the plain truth should be spoken. There is something behind the barricades more dangerous than the Communist behind the barricades in the streets of Paris in the last century. Man's cupidity is making countless thousands suffer in Philadelphia. It is bringing your city to the verge of an epidemic. My own intelligence tells me that we are already there. It is time for us to ask who are behind the barricades and obstructing our pathway. If the citizens of Philadelphia knew the whole story as to how the cupidity of a few men are blocking your way, you would have such reading in your newspapers for the next few days as would awaken you all. I believe there are men who are worse than any that can be found in Councils. I believe that there are men there who are ready to say that 'we have gold enough until we have good, pure water to drink.' I think a man in Councils ought to blush who would attempt to make money of what is a vital, prime necessity of life—pure water. [Applause.] While we are literally shaking hands with death, shall we stop to make men rich?"

Dr. S. Solis Cohen called attention to New York's one-time boss politician's famous question, "What are you going to do about it?" That question was answered right in New York, and each citizen should ask himself in this juncture the same question. "You will not get pure water unless," he said, "you demand from your Councilmen, in a voice in which there is no uncertainty, that they give you pure water now, and not next year, and not when the private companies that are fighting with one another to see which shall get the spoils have settled their differences and the doubts of Councilmen as to which is the most liberal and generous." [Great applause.]

Speaking of the apathy of the people on this subject, he said:

"The efforts of the Health Protective Association, of the City Filtration Committee, of the medical societies, of the Organizations' Committee, zealous and indefatigable as they have been, have not yet, even in the presence of this epidemic, received that united and determined support from the people at large which can alone force the City Fathers to put aside at once and decisively the schemes for turning the distress of the people into private profit, and to adopt the one and only measure which at this juncture is worthy of consideration—namely, filtration."

THE VERDICT.

Dr. John K. Mitchell read the following resolutions, which were unanimously adopted:

"Whereas, The citizens of Philadelphia have authorized a loan of $3,700,000 for the increase, improvement and filtration of the public water supply; and

"Whereas, City Councils have persistently refused to take any action towards creating the loan and providing for the erection of the necessary filter plants; and

"Whereas, An epidemic of typhoid fever is now prevailing in this community, causing sickness, distress and death in many homes, all of which is directly due to the failure on the part of the city authorities to perform their plain duty to the people they represent; and

"Whereas, The private schemes of speculators who desire to profit from the necessities and sufferings of this community should not be permitted to occupy the valuable time of City Councils and divert them from the vital and all-important immediate consideration of the water supply and the relief of our citizens at this critical juncture;

"Resolved, That no reason or excuse exists for a moment's consideration by Councils of the so-called Schuylkill Valley water scheme or of any scheme having reference to either the Schuylkill or Delaware rivers, which contemplates diverting the revenues of the Water Department to the treasury of a private corporation.

"Resolved, That the citizens of Philadelphia will never consent to the transfer of any portion of the works connected with their public water supply to any individual or corporation, but insist that they shall remain permanently under direct municipal management and control.

"Resolved, That it is the duty of Councils to create immediately the loan of $3,700,000, authorized by their constituents at the polls, and to proceed without delay to increase, improve and filter the public water supply, as the vote upon the Loan bill contemplated and provided.

"Resolved, That any further delay upon the part of Councils in proceeding with this important work will carry with it a moral responsibility for the needless suffering and deaths that will be the certain result of such delay.

"Resolved, That this meeting hereby directs that copies of this preamble and resolutions be transmitted to the Mayor and to Select and Common Councils, and they are hereby urged to take immediate action for the creation of the loan and for the purification of the city water supply by filtration, under direct municipal control, ownership and management, and in no other way."

SPONTANEOUS COMBUSTION OF COAL.*

By John L. Howard.

An editorial published in the "Coal and Iron Record," June, 1875, states, in substance, that there never has been a case of legally proven spontaneous combustion in ships, yard or mine; all cases alleged to be due to this cause being properly attributable to incendiarism, the dropping of a match or lighted cigar or pipe, or other accident. It might puzzle this iconoclastic writer to account for the presence of a coal fire 12 feet below the upper surface of a pile.

*Abstract of a paper read at the Fifth Annual Meeting of the Pacific Coast Gas Association, July, 1897.

Let us now examine some of the theories concerning the deeper lying *cause or causes* of the subjects at issue.

If the true cause of spontaneous combustion be ascertained, as I think it has been, there may be a more intelligent study of means for its prevention and control, although it must be confessed that, in these latter respects, but little if anything of a practical character has been accomplished. Observation and experiment have established beyond question that *there is greater liability to self-ignition when the coal is fine and when the mass is deep.*

In the process of loading ships with bituminous coal, that may or may not have undergone a hurried screening at the time of shipment, it will be found that, whether the coal be dropped from a chute or spout that overhangs the hatchways of the upper deck, or whether the coal be lowered through the hatchways and dropped in the hold with a minimum of fall, the forming pile will assume the shape of a cone. In this process there will be breakage, dependent upon the friability of the coal and the amount of fall. This breakage will be sensibly increased if, in addition to the drop, the coal is allowed to go into the ship with a velocity due to the steep incline of the loading chute.

There will be a shattering of lumps and a compacting of the mass because of the impact of blows from the falling body of coal. It will be further noticed that the fine coal resulting from this method of loading ship lies in an inert mass where it falls, whereas the tendency of the lumps is to roll down the sides of the cone toward its outer edges. It is this coarser material which the stevedores move in the filling and trimming of ships, and, therefore, the undisturbed fine coal, resulting from the loading of a cargo, is concentrated under the hatch openings, and it is in this fine coal that fires on shipboard uniformly occur.

It must be obvious also that the larger the vessel the deeper the hold, the greater the breakage and the more dense the accumulation of fine coal, hence it has been noticed, from the reports of coal carrying vessels whose loss has been traced to the spontaneous ignition of cargoes, that the percentage increased in a rapid ratio with the increase in the size of cargoes. The loss was nearly double, as between vessels of 1,500 to 2,000 tons and of those beyond 2,000 tons.

Let us follow the practice of unloading these coal cargoes and their storage where business necessities require large deposits, and where, to economize in expense and in space, deep masses are

piled around the wooden supports of the protecting sheds and of the overhead tramways.

The first coal that is taken from the ship is the fine coal lying beneath the hatchway openings, and before the bottom of the vessel is reached, this fine coal, together with such lumps as have rolled into the cavity made by the stevedores, will have been sent on shore, and with this fine coal the process of cone building begins in the storage sheds. The amount of fine coal originally in the ship is increased during the piling process on shore, and this is often covered by coal subsequently discharged.

Here, as on shipboard, spontaneous ignition is found to take place in the mass of fine coal below the surface of the pile, and if there be pieces of wood, or the wooden supports of a structure, embedded in the mass near the affected portion, the firing of the coal will be expedited, because wood will ignite at a lower temperature than will the surrounding coal. Here, then, we have the most fruitful *source* of trouble.

Spontaneous combustion of coal is due to the chemical combination of oxygen (1), with compounds of sulphur found in coal, or (2), with the carbonaceous parts of the coal itself.

The sulphur theory will probably be found to be the one popularly accepted, as indeed it was made the scientific theory, by the noted Swedish chemist, Berzelius, who died as recently as 1848.

The investigation of Dr. Percy in England, in 1864, and of Dr. Richter in Germany, in 1870, went to clearly prove that, as a working hypothesis, it did not account for all the discovered facts; and, therefore, it had to give way to newer scientific deductions.

Iron pyrites or disulphide of iron, which is disseminated in greater or less degree throughout coal, is the only sulphur compound there found, which, by oxidating under favoring conditions, will gradually develop heat sufficient to make its self-ignition a possibility. Sometimes, however, the pyrites will rapidly oxidize, and at others it will remain unchanged for a long period.

Many coals almost free from sulphur are notoriously dangerous, while others known to be heavily charged with it have proved themselves to be quite safe for transport and storage.

The sulphur theory will not account for the self-ignition of freshly made charcoal, nor of hemp cotton, nor of wool, when saturated with animal or vegetable oils and subjected to favoring temperatures.

The recent conclusions seem to point out that pyrites is merely accessory to the trouble, in that through oxidation it lowers the point of ignition in the surrounding mass of coal, and in the process it swells, causing disintegration of the lumps, and consequently increases the absorbing surface of the coal. It was found by test that sulphur would take fire at 482° F., whereas cannel coal ignited at 700° F., and Cardiff coal at nearly 900°.

The theory worked out by Richter, and now accepted as correct, may be briefly stated as follows:

Two of the constituent elements of bituminous coal, viz., the carbon and hydrocarbons, have a strong attraction for atmospheric oxygen, and, under ordinary conditions, this absorption of oxygen will be in proportion to the surface exposed to the porosity of the coal and to the temperature of the mass.

It was found by experiment that some English coal absorbed twice its own volume of oxygen, and in a pulverized state this absorption equalled 2 per cent. of its own weight.

The superficial area of a cube of coal 30 feet in thickness is easily determinable, but not so if that cube be shattered into a mass of the character in which coal is found on shipboard or inland storage, and this inconceivably large increase of absorption surface is active in attracting and condensing the atmospheric element that consumes it. It must be remembered that oxygen so absorbed has been largely rid of the diluent nitrogen and, therefore, is better fitted for the process of oxidation, which begins slowly, but at once.

In this process two actions are set up. The combination of the oxygen with what is called the *disposable* hydrogen in the coal to form water; secondly, the combination of oxygen with the carbon, forming carbonic acid gas, and heat is evolved as the result of both actions. In the initial stage it is not sensible, nor is it apparent as in the case of iron, where visible rust indicates the process. When this heat is subject to the cooling effect of the atmosphere, or when it can be conducted from its source, no danger is to be apprehended, but where the evolved heat is not so conducted or cooled, as is the case in a mass of fine coal, the temperature will rise and continue with accelerated rapidity as the ignition point is approached.

Experiments showed that under a low initial temperature the chemical action due to this combination was slow, but when it exceeded 100° F. the process was rapidly aided, and powdered

coal, with an ignition point of 700°, was found to take fire in a few hours upon exposure to a steady temperature of 250°.

Here, then, you have the gist of the Richter theory—viz., the combination of atmospheric oxygen with the consumable coal constituents and under favoring temperature conditions.

This explanation will dispose of the natural inquiry as to why the surface of the pile most exposed to atmospheric oxygen, and to renewed supplies of it, should escape ignition, while the compacted mass in the interior and not so exposed should be more liable to the trouble.

It is certain this chemical action is going on in the surface coal, but in that case the evolved heat is counteracted by the coolness of the surrounding air; whereas within the pile the atmosphere is still, there are no cooling currents, and the fine coal itself acts as a non-conductor of heat.

It is also certain that the interstitial spaces between the lumps or particles of coal in the mass are filled with air carrying one-fifth of its volume of oxygen. The fact of such a fire is indubitable proof of the presence of oxygen, without which it could neither occur nor exist, and its maintenance is due to the drawing of air through the surrounding mass to the region of chemical activity.

From this it is obvious that in every pile of coal there exist two of the conditions that obtain in active furnaces. In the one case the combustion is made visible and intense through the greater rapidity with which the chemical action is made to occur after heat has been first applied; in the other case combustion is as surely taking place, though not apparent until the self-evolved heat reaches a point where the conditions become identical.

In so far as I have had access to German and English publications on this subject, they treat of bituminous coals, and not of those that are partially or wholly anthracitic.

Prof. Vivian B. Lewes, who has handled the question with great ability, is of the opinion that the absorbed oxygen "rapidly commences to attack the hydrocarbons present in the coal, having apparently but little action on the carbon itself."

No sharp line of demarcation can be drawn between the anthracite and bituminous classes, but the distinguishing feature of the anthracite condition is the high percentage of fixed carbon and a low percentage of volatile hydrocarbons. If the first, and greatest, activity of the oxygen is with the hydrocarbons, how shall we account for spontaneous fires in cargoes where hydrocarbons

constitute so small an element? We know that Welsh anthracite coal has heated in the ships "Orient," "Glencona," and in other vessels; and that, in May, 1897, the ships "City of Benares" and "Lodore," bound with coal from Cardiff to Victoria, were obliged to put into Montevideo; but yet there is no recorded instance on this coast where either of these coals has fired in land storage, although they were piled for long periods in deep masses and with the maximum amount of breakage due to handling.

Large experience in these products leads to the conclusion that, as they come from the ships, Welsh anthracite coals will yield from 10 to 25 per cent. of screenings, dependent upon the friability of the material and the care or want of care at the shipping point; and the softer Cardiff coals have been known to yield beyond 40 per cent. of fine material that passed through bars three-fourths of an inch apart.

With these, as with all coal cargoes, it is seen that the accumulation of fine coal is beneath the hatch openings; and in or near this point will be found the seat of trouble when it occurs.

It must be remembered that coal cargoes from Great Britain for California are obliged to pass twice through the tropics, and it has been noted that, within the influence of the Equator, there is a material rise in the temperature of the coal.

We know that iron pyrites abounds in some grades of Welsh anthracite coals, and this is largely owing to false economy, carelessness or indifference to reputation on the part of some shippers. We have had abundant evidence of partial screening, or the entire neglect of it, at the shipping point; but, although fires on shipboard with anthracite coals are happily infrequent, the conclusion would seem inevitable that when they do occur it is by the direct oxidation of the carbon, with the hydrogen and pyrites as subsidiary aids. Like results proceed from like causes.

The cause of spontaneous fires in anthracite coal where hydrocarbons exist in limited quantity is the same cause that produces them in bituminous coals where the hydrocarbons exist to a greater extent.

We may briefly now refer to some of the expedients that have been tried or suggested for the prevention and control of this evil. Certainly there is no more inviting field for ingenuity, seeing the great loss of life and property from this cause in the past, and the existing and increasing risk, owing to the larger size of vessels engaged in coal transportation.

There is a further economic reason, due to the steady rise in the rates of insurance, which has made the freightage of some British coals to our port prohibitory. Underwriters, because of costly experience, have charged increased rates, not only on dangerous coal cargoes, but also on the vessels that carry them. So true is this that Scotch splint coals from Glasgow, and North Wales steam coals from Birkenhead, that formerly came freely to us, can no longer be carried in British ships; and for these grades we are dependent upon Norwegian vessels that are not subject to English insurance rules.

So, too, many British shipowners are refusing to carry Wallsend coal, than which no other product from Australia is so well known in our market.

Primarily, to reduce breakage in shipment, and incidentally to avoid spontaneous combustion, the most extensive and expensive arrangements in the world exist at the coal shipping docks in Cardiff. There the railroad cars are unloaded into large vertical cylinders, which, by means of lofty, powerful cranes, are hoisted from their pits, swung over the hatchways, lowered into the holds and discharged through the bottom with the minimum of fall to the coal. At other places the same result is arrived at by lowering small coal cars or wagons into the vessels.

The most direct attempt at the prevention of heating was the use of an air trunk, placed along the keel and fitted with slat openings. This involved the idea of ventilation and cooling. In practice, it was often found to produce the condition it was intended to avoid, because, while it did not supply the cooling effect, it too frequently furnished the necessary amount of air to promote rapid oxidation and the consequent final heating of the cargo. This practice has been abandoned.

The Germans have a method of locating in coal piles vertical, air-tight wooden shafts, to conduct the generated heat into the atmosphere above. It was observed that when these were not air-tight, fires often occurred at the point of leakage.

As to the means of controlling spontaneous coal fires, opinion has taken different and sometimes curious channels. For example: The creation of a partial vacuum on shipboard in order to get rid of the dangerous atmosphere with its oxygen; the coating of the coal with a non-oxidizable mineral oil to prevent access of the oxygen to the coal; the use of many pipes through the holds for the conduction of the heat, and in time of danger to permit the

forcing of steam into the mass of coal; the carriage of materials on shipboard to generate carbonic acid gas and the use of a pump for its forcible distribution, as well as afterwards to exhaust it from the hold; the placing, under and about the hatchways of ships, of flasks containing liquid carbonic acid gas, and fitted with fusible plugs that will melt below the ignition point of the coal. The liberated gas would at first freeze and within the region of its influence it would permeate and cool the mass of coal.

It was first suggested that each fiask might be electrically connected with the cabin, and the fusing of the plug would at once report the fact and the location of trouble.

In storage on land, the structural supports embedded in coal should preferably be of iron, and the first and finest coal discharged from each vessel should be isolated and used, and not covered with other coal.

As far as time and space permitted, we have hurriedly gone over this important subject; and, in leaving it, we may sum up the conclusions which scientific investigations have thus far reached.

Spontaneous combustion is due to the chemical action set up between the carbon constituents and the atmospheric oxygen which is absorbed by coal; the volume of oxygen so absorbed depends upon the surface exposed and the porosity of the coal; the chemical action evolves heat, and when this heat is confined it results in a constantly increasing temperature, and this accelerates the process of oxidation; analyses will not distinguish between the safe and unsafe coals.

It is the deep mass of small and fine coal that constitutes the danger; and coals of a firing tendency are dangerous, some at one depth of pile and some at another.—"American Gas Light Journal," Aug. 9, 1897.

TWO CURIOUS CASES OF ALLEGED SPONTANEOUS COMBUSTION are furnished by recent press reports. One comes from Peoria, Ill.

A man was in bed with turpentine upon his naked chest. Over this was placed cotton. In taking off the cotton spontaneous combustion occurred, and the bed-clothes were set on fire and the man was badly burned. Fortunately the fire was extinguished before it spread to the house.

The other comes from Middletown, N. Y.

The fine barns on the famous Red Gate Farm, near Newton,

were destroyed by fire. Spontaneous combustion of peas, of which a quantity were stored in the barn for fodder, is supposed to have caused the fire. The barns were insured for $25,000. It is well for underwriters to remember that hay is not the only fodder crop that is liable to heat and cause a conflagration. Other vegetable growths may do the same thing under favorable conditions, just as flour and sawdust may explode.—"Insurance Monitor."

SALT LAKE—MORE SALTY THAN THE DEAD SEA.—Water of the Great Salt Lake varies greatly in its contents of dissolved solids, depending upon the relation between the supply of water through streams and the evaporation. A fair average of total solids dissolved in the water of the lake at its present mean level is from 19 to 20 per cent. by weight. But not all of this is common salt; for besides this ingredient the water contains sodium sulphate (Glauber salts), magnesium chloride, calcium sulphate (gypsum), and potassium sulphate. A detailed analysis of water taken from the lake in August, 1888, was made by Dr. Talmage. This contained in all 19.56 per cent. dissolved solids, of which 15.74 was common salt. Such water would yield of total solid matter 391 pounds to the ton, and of common salt about 314 pounds to the ton.

The Dead Sea contains a greater proportion of solid matter dissolved in its waters than does the Great Salt Lake. Much discrepancy exists among published accounts of its contents, the fluctuations in composition being due to the same causes that prevail in our lake, viz., the relation between the supply through inflowing streams and loss by evaporation. A sample taken from a depth of 1,110 feet carries 25.4 per cent. of dissolved solids. This corresponds to 528 pounds to the ton; but of this only 7.55 per cent. was common salt—or 151 pounds per ton.

Therefore, though the Salt Lake carries a lower proportion of dissolved solids of all sorts than does the Dead Sea, the lake contains more than double the proportion of salt. The chief solid constituent of the Dead Sea water is not sodium chloride (common salt), but magnesium chloride. Strictly speaking, the water of our lake is much "brinier" than that of the Dead Sea, common salt being the chief solid dissolved in the lake. Nevertheless the Dead Sea is much more highly saturated with solids.—Detroit Evening News.

RAILROAD ACCIDENTS.

[Written for the New York Times.]

BY H. G. PROUT, Editor of "The Railroad Gazette."

A few weeks ago appeared the Inter-State Commerce Commission's statistics of the causualties to persons in railroad accidents in the United States for the year ending June 30, 1896. The total of killed was 6,448; of injured, 38,687. For nine years the average deaths were 6,444 a year; the average injuries were 33,000. At Gettysburg the killed in both armies were 5,500, and the wounded were 26,300. (These are the estimates of the Count of Paris. "The American Cyclopedia" makes them 7,800 killed and 36,700 wounded. The Confederate losses can never be accurately known.) Considering the figures as stated in this bald, unqualified way, they are alarming, and the student from Uganda coming to our shores and making no further analysis might properly conclude to see the country on foot or from a bicycle. But without further analysis, these statistics are deceiving.

To most of us the real interest in railroad casualties is as they affect those who travel as passengers. Popular interest in all other classes is in kind the sort of interest that we feel in the poor, or in foreign missions, and in a degree much less. We find, then, that of actual passengers the killed in nine years averaged 283 a year, and the injured averaged 2,600. The passengers killed were only one-twenty-third of all the deaths, and passengers contributed only about one-thirteenth of the injured.

But even this gives an exaggerated notion of the dangers of traveling. Of all the casualties to passengers less than one-half are in train accidents. The other deaths and injuries to passengers occur at highway crossings (going to and from stations, probably), at stations, and from "other causes." This last item is large and very vague. It includes those killed and injured while getting on and off moving trains, falling between cars, sticking their heads and arms out of windows, and in other exhibitions of carelessness. Unfortunately, the commission does not analyze the casualties to passengers at stations and from "other causes," and from the figures in its report we cannot even

guess how many were killed and injured by their own fault. The reports of the Railroad Commissioners of the State of Massachusetts are better digested in this respect (as in most other respects), and there we discover that the passengers killed and injured from causes beyond their own control have, for at least ten years, been less than half of the total.

We must remember, further, that of the injuries much the greater part are very slight, a large percentage being so slight that even the "ambulance bar" can find in them no basis for damage suits. We might therefore with considerable reason judge that the railroads are responsible each year for the death of only 142 passengers, for the injury (more or less seriously) of only 1,300. But let us assume that the railroad officers must reckon on the foolishness and obstinacy of their passengers as among the forces to be guarded against, along with floods and fires, gales and landslides, insubordination and drunkenness, and along with ignorance, indolence, carelessness, and greed, all the way from the blast furnace up through the forge, the rolling mill, and the machine shop, to the finished locomotive. We will assume, then, that the railroads are responsible for all passengers killed and injured, whatever the cause. How successful are they in taking care of the lives of those who travel by rail?

The passengers killed in a year are 283. But the passenger travel in 1896 was 13,049,000,000 miles, or it equaled one passenger traveling that distance. It follows that a man can travel by rail 46,000,000 miles before he is killed. In other words, if he travels night and day at 35 miles an hour he must travel 150 years before he is killed. Doubtless the student from Uganda will be far safer on a railroad train than on a bicycle, but perhaps not quite as safe as if he made his journeys on foot in the civilized parts of our country.

But if the average deaths are 6,444 a year, and the passengers killed are but 283, if the average injuries are 33,000, and the passengers injured are but 2,600, how shall we account for the other 6,161 killed and 30,400 wounded? To save labor and a confusion of figures we shall deal only with the killed henceforward; the lesson will be precisely the same as if we included the wounded also. The employes killed per year in the last nine years were 2,210, and the "other persons" were 3,951.

Of the employes killed last year about 12 per cent. were killed while coupling and uncoupling trains; 25 per cent. by falling

from trains and engines; 19 per cent. in train accidents; nearly 10 per cent. from overhead obstructions at highway crossings and at stations, and, finally, 34 per cent. from "other causes." Again, we see that a very large percentage of the deaths is classified so vaguely as to vitiate analyses or deductions. But the small percentage due to train accidents is striking and extremely interesting as suggesting the safety with which trains are run. The total number of employes in the year considered (we are not now dealing with the nine-year averages) was 826,620. These men did an immense amount of traveling, but those killed in train accidents were only 348, and, of course, most of these were in freight train accidents.

Probably the reader will be surprised, too, at the comparatively small number killed while coupling and uncoupling cars (229) after all that he has heard about the perils of this work. It must be remembered, further, that automatic couplers will not save all these lives. Men who have to break up and shift and make up trains must always get into dangerous places, even after they are no longer obliged to go between cars. Running about a busy freight yard at night is risky work, and always will be.

Of the great number killed by falling from trains and engines an important part will be saved when all freight braking is done by air, and the men do not have to run over the top of the train to set the brakes, but it would be useless to try to guess how many of those killed by falling from trains were braking or doing any necessary work. Much of this great mortality was from carelessness. So we must not expect that the 12 per cent. killed in coupling cars and the 25 per cent. who fell from cars and engines, and the 3 per cent. who were killed by overhead obstructions will all be saved when all freight cars have automatic couplers and air brakes. What effect these appliances will have on the other 60 per cent. we cannot even guess.

There still remain 3,951 deaths per year to account for, or 61 per cent. of the whole. These are neither passengers nor employes. This is an astonishing fact. Who are they? We hear but little of them; we seldom think of them unless we have some special interest. Few of them are killed in train accidents—about as many as the passengers so killed. They are picked off one by one all over the country at the rate of about 11 a day the year around. About 544 of them are killed at highway crossings, 366 at stations, and 3,061 from "other causes" not specified. Just

what all these other causes are we cannot know precisely, but we have the means of guessing pretty closely. But that requires first a moment's consideration of another feature of this remarkable record.

Of the 3,951 persons other than passengers and employes killed every year (being 61 per cent. of all the deaths), 3,566, or 55 per cent. of the total, or 90 per cent. of the "others," are trespassers. Almost 10 persons are killed every day in the year because they are where they have no right to be. Of these trespassers 141 are killed at highway crossings, 323 at stations, and 2,957 from "other causes." This brings us to our guess, which is that far and away the most deadly of these "other causes" is walking on railroad tracks. The trespassers are run down in small numbers at road crossings, in greater numbers at stations and in yards, but in far greater numbers out on the open road, and this shocking waste of human life is going on, not through the fault of railroad officers, but mostly because of an ignorant and apathetic public opinion. But the discussion of this phase of our subject would lead us far, and it is enough to say now: Never walk on a railroad track. If you do, you run a fair chance of being hit by a locomotive. If you are hit, the chances are just about even that you will be killed.—From the New York "Times," Feb. 28, 1898.

STIMULUS TO REPENTANCE.

Some years ago, when the State of Ohio was "out West," there resided a family on the Sandusky River consisting of an old man, of the name of Beaver, and his three sons, all of whom were hard "pets," who had often laughed to scorn the advice and entreaties of a pious, though very eccentric, minister, who resided in the same town. It happened one of the boys was bitten by a rattlesnake, and was expected to die, when the minister was sent for in great haste. On his arrival, he found the young man very penitent and anxious to be prayed with. The minister, calling on the family, knelt down and prayed in this wise: "O Lord! we thank Thee for rattlesnakes. We thank Thee because a rattlesnake has bit Jim. We pray Thee send a rattlesnake to bite John; send one to bite Bill; send one to bite Sam; and, O Lord! send the biggest kind of a rattlesnake to bite the old man; for nothing but rattlesnakes will ever bring the Beaver family to repentance."

THE MEDALS, JETONS, AND TOKENS ILLUSTRATIVE OF SANITATION.*

By Dr. H. R. Storer, Newport, R. I.

SUPPLEMENT V.

I. Sanitation in General.

Moses of Judæa.

Besides Nos. 1680-84, 1906, 1933-4, and twenty-eight of the Wittenberg Pestthalers, there is another medal.

2346. Obverse. Moses striking water from the rock. Beneath, in five lines: Moses Virga Prodvxit | Aqvam De Petra (etc.) Reverse. Two men at a fountain. Beneath: Qvi Vero Biberit Aqva | (etc.) 1554. Silver. 30.47mm. I have impressions from Dr. Brettauer, of Trieste.

The United States.

Dr. David Hosack (1769-1835), of New York. Besides No. 25, there is another that is possibly unique, being perhaps a trial piece which failed to be accepted.

2347. Obverse. Bust facing, very slightly, to right. No inscription. Reverse as that of No. 25. Lead. 21.33mm. Storer. Am. Journal of Num., Oct., 1895, No. 906. In my collection.

Of Hygienic Societies, etc., there are:

2348. Obverse. Bust to left, with cap. Upon shoulder, at right: Lemaire. Inscription: Christoforo-Colombo Reverse. Upon a shield with stars and stripes an erect, outspread eagle, to left. In its beak a scroll bearing: E Pluribus Unum Inscrip-

*The previous portions of this enumeration have been in the numbers of the Sanitarian for Jan., Feb., May, July, Aug., Sept., Oct., 1890; July, Aug., Sept., 1891; Jan., Feb., March, 1893, and July, Aug., Sept., Oct., 1894. During the more than three years that have elapsed since the last, I have been able to add materially to the list.

tion: World's Hygi-|enic Exposition—Chicago 1893 Gilt, plated, bronze, 42.68mm. Only sixty struck for the Belgian International Association for the Progress of Hygiene. De Witte, Méd. Hist. de Belgique, p. 25, No. 111, pl. VII; Storer, *loc. cit.*, April, 1895, No. 853. In the Government collection at Army Medical Museum, that of Dr. W. S. Disbrow, of Newark, N. J., and my own.

2349. Obverse. Laurel branches tied by ribbon, enclosing all. Within field, an antique lamp upon whose edge: Sapientia. Beneath: 1879 Around, a band with three folds. Upon it: Corporis—Et Animi— | Sanitas Inscription: Lenox School | City of New York Reverse, blank. Bronze, 24.37mm. I owe impression to Mr. David Proskey, of New York.

2350. Obverse. Within blue enamel circle, the city arms. Inscription: Board of Health, City of Newark. Reverse, blank. Gold, with pin attachment. Storer, *loc. cit.*, Jan., 1897, No. 1087. Worn by the Health Commissioners. Communicated to me by Dr. W. S. Disbrow, one of their number.

2351. Obverse. Upon Maltese cross with chased edges, the State arms surrounded by circular bands, also with chased edges, upon which: * The Board Of Health * Of The City Of Newark Reverse, blank. Brass, nickel plated. *Ibid.*, July, 1897, No. 1088. Worn by the Inspectors. I have engraving from Dr. Disbrow.

The following dentist's token, though also of the French series, may be classed in this connection:

2352. Obverse. Bust to right. Inscription: Hygiene Et-- Proprete Paris | ***. Reverse: Within circle: Systeme | Americain=. Inscription: Exposition Universelle | (rosette) 1867 (rosette). Bronze. 15.23mm. Storer, *loc. cit.*, July, 1896, No. 1011. In my collection.

England.

Dr. Sir George Buchanan (-1895), of London.

2353. Obverse. Head to left. Inscription: Sir George Buchanan, M.D. F.R.C.P. F.R.S. Reverse: Two females, erect, of whom one wards Death, winged and with a scythe, from a prostrate person. Legend: In Salvtem Publicam Avdacia et In-

dustria Exergue: The staff of Æsculapius. Gold (value twenty guineas), bronze. 35.55mm. Storer, *loc. cit.*, Oct., 1894, No. 771; Record of Royal Society, I, 1897, p. 132, fig., and p. 194, No. 59. To be awarded every three or five years for hygienic research.

Dr. John Howard, of Berkeley.

Besides Nos. 31-56, 1685-9, and 1935-6, there are the following:

2354. Similar to No. 47 (date 1795), but upon rim: Payable at the Warehouse Liverpool XXX. Copper. 18.29mm. Atkins, *loc. cit.*, p. 63, No. 75; Storer, *loc. cit.*, April, 1894, No. 726. In my collection.

2355. Similar to No. 38, but upon rim: Payable in Anglesey London or Liverpool Copper. 18.29mm. Atkins, *loc. cit.*, p. 370, No. 109; Storer, *loc. cit.*, April, 1894, No. 727. In the collections of Dr. Brettauer, of Trieste, and Mr. F. C. Browne, of Framingham, Mass.

2356. As No. 31, but rim plain. Atkins, p. 215, No. 92a; Storer, *loc. cit.*, April, 1895, No. 864.

2357. As No. 38, but upon rim: Payable at Banbury Oxford or Reading X Atkins, p. 172, No. 30; Storer, No. 865. In the Brettauer collection.

2358. As preceding, but upon rim: Payable by Henry Olivers X Atkins, p. 370, No. 109b; Storer, No. 866. In the Brettauer collection.

2359. As preceding, but upon rim: Masonic Half Penny MDCCXCIV Atkins, p. 370, No. 109e; Storer, No. 867. In the Brettauer collection.

2360. As No. 45, but upon rim: Payable at Anglesey Liverpool or Congleton Atkins, p. 39, No. 38a; Storer, No. 869.

2361. As preceding, but on rim: Payable at Anglesey London or Liverpool Atkins, p. 39,, No. 33b; Storer, No. 870.

2362. As preceding, but on rim: Payable at Sharps Portsmouth and Chaldecotts Chichester. Conder, p. 42, No. 18; Prattent, No. 89; Atkins, p. 39, No. 32; Storer, No. 871. In the Brettauer collection.

2363. As No. 46, but with the same rim as the last. Atkins, p. 39, No. 33; Storer, No. 872. In my collection.

2364. As preceding, but no dot after Howard. Atkins, p. 39, No. 34; Storer, No. 873. In the Brettauer collection.

2365. Obverse as that of No. 51. Reverse. View of Cathedral. Exergue: York. 1795. Upon rim: Fear God and Honour

the King. Conder, p. 184, No. 32; Atkins, p. 256, No. 62; Storer, No. 874.

2366. As No. 52, but on rim: Payable at the Warehouse of Alex. R. Molison. Conder, p. 62, No. 5; Atkins, p. 306, No. 7; Storer, No. 875.

2367. As preceding, but rim plain. Atkins, p. 306, No. 7b; Storer, No. 876.

2368. As No. 53, but without date. Atkins, p. 39, No. 35; Storer, No. 877. In the Brettauer collection.

2369. As No. 47, but without the three crosses after inscription upon rim. Atkins, p. 39, No. 36a; Storer, No. 878.

Dr. Edmund Alexander Parkes (1819-1876), of Netley.

Besides No. 47 and 1066a, there is the following society medal:

2370. Obverse. The staff of Æsculapius; the serpent drinking from cup at left. Inscription: British Institute of Public Health Border scrolled, and with branches of medicinal plants. Reverse, blank. Gold, hollow. Oval. 29x38mm. Watered silk ribbon, with white and scarlet bands. Illustrated London News, 4 Aug., 1894, fig.; Storer, *loc. cit.*, Jan., 1897, No. 1107. Worn by the Committee at the Guildhall Reception in 1894.

See also Section VIII, Diet.

Belgium.

Dr. Pierre Joseph van Baveghem (1745-1805), of Baesrode. Besides No. 702, there is:

2371. Obverse. The chalice of Hygeia, entwined by a serpent. Inscription: Recompense Pour Travaux Scientifiques. A special border contains the names of eminent Belgian physicians and pharmacists: Van Helmont - Pypers - Van Mons - Van De Vyvers - Hauchamps - Verbert. Exergue: Decision Du 2 Janvier 1856. Reverse. Upon border, additional names: Kikx - Stoffels - Van Baveghem - Sassenius - Coudenberg. Within field: La | Société De Pharmacie | D'Anvers | A Mr. D. A. Van Bastelaer | -.- | 4 Mai 1858 | * 50.78mm. Prize medal of the Antwerp Society of Pharmacy.

Society medals. See No. 2348 (Chicago, 1893).

International Exhibition of Hygiene, etc., 1876.

Besides No. 2141, there are the following:

2372. Obverse. Head, to left. Beneath: Ch. Wiener. Inscription: Leopold II Roi - Des Belges Exergue: 1876. Re-

verse. Within palm and laurel, tied by ribbon and interlaced above: Médaille | D'Admission | — Inscription: Exposition et Congrès D'Hygiéne et De Sauvetage A Bruxelles. Bronze. 38.60mm. Picqué, Méd. Hist. de Belgique, p. 99, pl. XLV., fig. 54. In the Government collection and my own.

2373. As preceding, but oak wreath enclosing a tablet. 38.60 mm. Revue belge de num., XLIV., 1888, p. 231, No. 64.

2373a. Obverse. Head, to left. Beneath: Charles Wiener. Inscription: A Jules Anspach Bourgmestre De Bruxelles. Reverse. Within crossed oak branches, circular field. Inscription: Exposition Et Congrès D'Hygiéne Et De Sauvetage A Bruxelles. White metal. 38.60mm. Edge of obverse beaded. In my collection.

2374. Obverse. Upon an elaborate cartouche with chased border: Exposition Internationale | D'Hygiène | Et De | Sauvetage | Bruxelles | * 1876 * Beneath: A. Kisch Reverse. A very elaborate trophy of crossed laurel branches, musical script and instruments, flags, etc. In front, a scrolled cartouche, surmounted by crowned national shield with motto, and laurel twigs. Within circular field: Souvenir Bronze. 35.55mm. In my collection.

Congress of Hygiene and Public Medicine, 1880.

2375. Obverse. Within a beaded circle, the Belgian arms; beneath, upon band, the national motto. Inscription: Royaume De Belgique | * Reverse. Inscription: 50e Anniversaire De L'Independence Nationale | x 1880 x Within circle: Souvenir | Du | Congrès | D'Hygiéne | Et De Médicine | Publique | Tenu A | Bruxelles Bronze. 15.23mm. Souvenirs num. du 50me anniversaire de la Independ. de la Belgique, p. 22, No. 47. In the Government collection and my own.

France.

Dr. Jean Charles Desessartz (1729-1811), of Paris.

Besides Nos. 65 and 66, there are:

2376. Obverse, as that of No. 65. Reverse. A seated female. At her left another, resting left hand upon a bundle of fasces. In distance, a pyramid. At right: D V (Du Vivier.) Legend: Concordia Et Constantia Vincent. Exergue: 1786.87. 19.29mm. Chéreau, L'Union medicale, 6 Mars, 1873, p. 324.

2377. Obverse as preceding. Reverse. Titans, etc., Jupiter to left. Inscription: Clarus Giganteo Triumpho. Exergue vacant. In the Government collection.

2378. Obverse as preceding. Reverse plain. Rudolphi, p. 41, No. 160; Kluyskens, I., p. 251, No. 3; Duisburg, p. 89, note.

Baron Dr. R. N. D. Desgenettes (1762-1837), of Paris.

Besides No. 67, there is:

2379. Obverse. Head, to left. Beneath: David 1835. Inscription, at right: Bn. (Baron) Desgenettes. Reverse blank. Bronze. 102.160mm. Jouin, *loc. cit.*, p. 353, No. 923. In the Government collection.

Dr. J. B. A. Dumas (1800-1884), of Paris.

Besides No. 68, there are:

2380. A medal by David d'Angers. Jouin, *loc. cit.*, p. 251, No. 621.

2381. Obverse. Bust. Reverse. Inscription: 1882. Bronze. 42.67mm. Thieme, Num. Verkehr, April, 1895, No. 3062.

2382. A large medallion of D. is at the Nouvelle Ecole Supérieure de Pharmacie in Paris. Dupuy, *loc. cit.*, p. 115, No. 38.

Burgundy, Province of.

2383. Obverse. Bust, to right. Beneath: J. Tiollier. Inscription: Ludovico XVI. Fr. Et Navar. Regi Optimo. Exergue: Comitia Burgundica. Reverse. Within wreath of laurel leaves, tied above and below by ribbon: Artibus | Perficiendis | Artificum | Saluti | Tuendae | Lauream Consecrat | Civis Beneficus, | Regia Scientiarum | Academia Decernit | MDCCLXXXII Trésor de num., V, pl. LVI., No. 2.

Lille.

2384. Obverse. Head, oak crowned, to right. Beneath: Caqué F. Inscription: Louis Philippe I — Roi Des Français. Reverse. Within laurel branches, tied by ribbon: Couseil Central | De Salubrité | Du Nord Silver, bronze. Octagonal. 20.30 mm. Van Hende, Numismatique Lilloise, p. 199, No. 518, pl. 56.

After the fall of Louis Philippe the following was substituted:

2385. Obverse. Filletted head of Æsculapius, to right. Behind, his staff. No inscription. Reverse as preceding. Silver. Octagonal. *Ibid.*, p. 199, No. 519, pl. 56; Kluyskens Cat., p. 49, No. 153.

Lyons.

2386. Obverse. The staff of Æsculapius, horizontally. Upon it, a cock; at each side, a tree. Inscription: Société De Santé De Lyon Reverse. Within oak branches, tied by ribbon and touch-

ing above: Prix | D'Emulation. Bell metal. 23.36mm. Edges beaded and lined. Neumann, No. 30,924; Hennin, p. 478, pl. 69, No. 692.

Marseilles.

2387. Obverse. Oak crowned head, to left. Beneath: Barre F. Inscription as in preceding. Reverse. A chalice, with serpent drinking. Inscription: Intendance Sanitaire De Marseille. Silver. Octagonal. 23.37mm. In my collection.

Nismes.

2395. Obverse. Hygeia seated, at right. Inscription: A L'Observateur Dans L'Art De Guerir. Reverse. Within wreath of laurel leaves: Prix | De L'Institut | De Santé | Et | Salubrité | De Nismes Bronze. 22.35mm. Struck in 1796. Trésor de num., VI, p. 119, pl. LXXXVIII, No. 7; Kluyskens Cat., p. 46, No. 74.

2396. Obverse. Hygeia, encircled by serpent, to left. Inscription: Au Talent — D'Observer Reverse as preceding. Trésor de num., VI, p. 119, pl. LXXXVIII, No. 6.

Paris.

2397. Obverse. Diademed female head, to left, with star above. Beneath: Oudiné. Inscription: Republique Française (rosette). Reverse. Within beaded circle: Commissions | D'Hygiène | Publique | Et De | Salubrité Inscription: Prefecture De Police Exergue: A star between branches of laurel. Silver. 24.38mm. Edge of obverse beaded. In my collection.

2398. Obverse. Head. Ponscarme. Inscription: Republique Française. Reverse. Ministère De L'Interieur. Services Sanitaires. Barre 1890. Hygiène. Silver. 32.50mm. Schulman Cat., June, 1896, No. 163.

2399. Conseil Géneral D'Hygiène Et De Salubrité. Seine-Inférieure. Silver. Octagonal. 22.35mm. Baer Cat., January, 1898, No. 114.

2400. Obverse. Bust, to left. Beneath neck: Barre. Inscription: Louis Philippe I — Roi Des Français Exergue: 1831 Reverse. Within laurel branches tied by ribbon: Conseil | Superieur | De Santé Silver. Octagonal. 23.36mm. I have rubbings from Dr. Brettauer.

2401. Obverse. A nursing female, enthroned. At left, a nude child with hoop; at right, another sitting. Beneath: Deverny. Inscription: Exposition D'Hygiène De La France Reverse. Laurel branches tied by ribbon. The Medical Week, Paris, 1 Jan., 1893, fig.

2402. Obverse. Within field: Paris. Inscription: Société Hygiènique. Reverse similar. Lead. 11.18mm. Thick planchet. In the Government collection. I owe its description to the curator, Dep. Surg. Gen. D. L. Huntington, U. S. A.

GERMANY.

Dresden.

2403. Obverse. View of the city. Exergue: Dresden. Reverse. Within laurel wreath, bound throughout by ribbon: Inter- | Nationale | Sanitats | Konferenz | Dresden | März-April | 1893. Silver. 23.34mm. Blätter für Münzfreunde, 1893, No. 189, p. 1821. In the Brettauer and U. S. Government collections and my own.

2388. As preceding, but smaller. 11.17mm. Thieme, Num. Verkehr, July, 1893, No. 2907.

Halle-on-the-Saal.

2389. Obverse. Within circle, an angel, irradiated, with outstretched arms. Inscription: Fur. Verdienstvolle. Leistungen. Exergue: A scroll. Reverse. Ausstellung | fur (between scrolls) | Ausländliche | Gesundheits u. | Kranken-pflege | (the Geneva cross, before branches of laurel) | Halle A. S. 1891 I have engraving.

Leipsic.

2390. Obverse. Within circles, an angel, irradiated, with upraised hand. Inscription: Unter D. Allerh. Protectorat - Der... Augusta V. Sachsen Reverse. Within a Geneva cross: Für Das | Rote | Kreuz | Hygiene | — Nahrung | Und | Koch | Kunst Inscription: Internationale * Ausstellung | * Leipsig MDCCCXCII * I have engraving.

Stuttgart.

2391. Obverse. Winged female, to left, with wreath, seated upon a rock. Inscription: Fur Verdienstvolle Leistungen Exergue: Three stars. Reverse. Ausstellung | Fur | Auslandliche | Gesundheits | Krankenpflege | —| uber | Stuttgart 1890 I have engraving.

2392. Besides the Asclepios Der Heilende medal of 42mm. (No. 10), there is a smaller, but otherwise identical one of 38mm. In my collection. The device of both obverse and reverse, and the legend of the latter, are same as those of the medal of Dr. G. F. B. von Adelmann, of Fulda.

The following belong here:

2393. Obverse. Within scroll, a caduceus, transversely upright; at left, an owl upon book; at right, a druggist's mill and a mortar. Above, an antique lamp; below, upon suspended band: Mens Sana In Corpore Sano. Reverse blank. 27.35mm. Storer, *loc. cit.*, July, 1896, No. 1008. I have engraving of this from Dr. F. E. Stewart, of Detroit, Michigan. It is of the Powers College of Pharmacy, Philadelphia.

See also No. 2146 of the present list.

2394. Obverse. Between laurel and oak branches, legend as in preceding. Reverse. This Medal Was Awarded To ——. Copper. By J. Moore, of Birmingham. Batty, II, p. 658, No. 1712, and p. 693, No. 2362.

2404. Obverse. Hercules, with club. Legend as in preceding. Reverse. The same, incused. Brass. Oval. *Ibid.*, II., p. 693, No. 2365.

There are also several allegorical medals of sanitation in addition to those previously given.

2405. Obverse. Carolvs XII. D. G. Rex Svec. Reverse. S'Il Dort, Il Fera Gveri. Joh. XI. 12. Hildebrand, *loc. cit.*, p. 567, No. 150.

2406. Obverse as preceding. Reverse. On Est Encore Incertain S'Il Sera Gueri. *Ibid.*, p. 568, No. 149.

2407. Obverse. Bust, to right. Inscription: Alfonsus. Rex Aragonvm. Reverse. Hygeia, erect, with staff of Æsculapius, extending a pomegranate in right hand towards left; shoulders and breast bare. Inscription: Opvs Pauli De Ragvsa. Heraeus, Bildnisse, 1828, p. 31, pl. 25, No. 2.

2408. As preceding, but shoulders and breast covered. *Ibid.*, p. 40, pl. 31, No. 2.

2409. Et Livore Eivs Sanati Sumvs. Weyl, 136th Cat., 12-14 Dec., 1894, No. 742.

See also our No. 2145.

(To be Continued.)

MEDICAL VIEW OF BICYCLE RIDING.

Under date of July 26, 1897, Consul Keenan sends the following from Bremen:

At a meeting of the Medical Society in Berlin, January, 1896, Dr. Mendelssohn, Professor in the University, read a paper on the

medical view of bicycle riding, which was published in the "Deutsche Medical Wochenschrift," No. 18, 1896. More recently it has appeared in the "Centralblatt für allgemeine Gesundheitspflege," and it is now being discussed in the German press in general. The chief points of the paper were:

The advantages of wheel riding may be inestimable, if practised intelligently and with moderation, but harmful or absolutely dangerous if carried to excess or in cases where riding should be prohibited. The advantages accruing to riders are obvious, since the wheel affords exercise and recreation to the mentally overworked, and as an independent and inexpensive means of locomotion it is ideal. The danger of the wheel may consist of injuries from accident, inflammation of the knee joint resulting from overwork, inflammation of both male and female pelvic organs resulting from pressure of the saddle, etc. Another danger is in the constant excessive exertion, which can produce an increased atomic and molecular change throughout the body, especially in the vital organs, to such a degree that a general weakening of the individual and an especial susceptibility to infectious diseases may result. The tendency to catch cold is proved by experience to be very great. The heart is subject to the greatest danger in cases of excessive cycle riding. A large number of sudden deaths have already been recorded, due to excessive strain on the heart.

Cases where wheeling should be prohibited are as follows: (1) Existing heart lesions; (2) arterial calsification; (3) albuminuria; (4) old age, and (5) childhood.

Cases where bicycling is beneficial are: (1) When excessive uric acid and gout exist; (2) in certain mild forms of chronic disturbances in the pelvic organs, which are thereby subjected to a certain degree of exercise, which has an effect similar to the gymnastics and massage of the Thur Brandt method; (3) when there are slight disturbances in the respiratory organs, except absolute lung dilatation.

It can be said that important points relating to the advisability of bicycling by girls and boys of certain temperament, as well as by certain neurotic women, are not observed in the foregoing remarks, but it must be conceded that the conclusions stated by Dr. Mendelssohn are true.

CLIMATE OF THE HAWAIIAN ISLANDS.*

By ALBERT B. LYON, M. D., Honolulu, Hawaiian Islands.

Perpetual June! There is no other month in the Hawaiian calendar. We have the names, it is true, January, February, and so through the list, but the skies of January, the showers of February, the roses of March, are June skies, June showers, June roses. It would be wearisome to go further with the enumeration. Why should it not be so? Lying in mid-Pacific, just within the limits of the torrid zone, in the belt of the northeast trades, how could the climate be other than equable and mild? Such expressions are vague and relative. Let me present a little of the detail of fact.

It is seldom that the thermometer in Honolulu registers a minimum temperature as low as 55° Fahrenheit. One who is not an early riser might truthfully say that in a five years' residence in that city he had seen the mercury only once as low as 60°. The days in the year having a mean temperature of less than 70°, or an average for the twenty-four hours as low as 67°, you could count on the fingers of one hand. About as rare, on the other hand, is a morning temperature above 76°, or a midday maximum in the shade as high as 87°. Of course in sheltered spots exposed to the direct glare of the sun in the summer months the temperature may rise to 90°. Only once in eight years of daily meteorological observations have I seen the thermometer really as high as 90° in the shade. In my study, with windows (screened with wire gauze) nearly always open to admit the breeze, the extreme range of the thermometer during three years of continuous observation was from 65° to 83°. About three days in the year the average temperature was as high as 80°, not once 81°; this in spite of the fact that the room, not a large one, was lighted during the evening by a Rochester lamp. About four days in each year the average temperature was below 70°, only once as low as 68°. Even more rarely was the temperature at 9 P. M. below 70°. Between the middle of April and the middle of November, 1893, the daily average was only twice below 75° and only twice below 79°. Is it strange that few houses in Honolulu indulge in the luxury of a fireplace?

*Read before the Detroit Academy of Medicine.

Equable? Yes, you say, but rather warm. So it is, in Honolulu, and for that matter at any point near sea level. But whatever may be said of the possible debilitating effect on some constitutions of our perpetual summer, there is little in it to complain of on the score of comfort. The temperature rises by imperceptible gradations from February until September. Some days in May and June, before the trade wind settles to its summer pace, suggest the idea that the sun is coming uncomfortably close, but before many hours the breeze freshens, and you conclude that nature was merely inviting you to the luxury of a swim in the half tepid water of the Pacific at Waikiki.

Warm days are common. They are the rule in September, but there is seldom a suggestion of sultriness in the air. If there is "muggy" weather at all it is in the cooler part of the year. In summer the dew point is at least ten degrees lower than the air temperature in the daytime. A sultry night is unheard of. The air always cools sensibly before nightfall, the night temperature being ten degrees lower than that of the daytime. If there is little wind the difference in temperature is correspondingly greater, the minimum being then occasionally as much as twenty degrees below the maximum.

One is surprised to find how little of fierceness there is in the rays of the nearly vertical sun. In the Eastern States one often dreads to step out of the door in summer at midday. In Honolulu you run out on an errand bareheaded in the sun without thought of discomfort. Such a thing as sunstroke is unheard of. In truth, the direct rays of the sun have far less power than where the upper atmosphere is less charged with moisture. A thermometer placed in the full sunshine will register only 105° to 115°, possibly 120°; a California sun, I am sure, could do more than that.

What I have said of temperature applies to Honolulu; and the Hawaiian Islands are large enough and high enough to furnish choice of climate. Even at the sea level, there are important differences, depending upon rainfall and wind. You may choose your residence at an elevation that will reduce by five or even ten degrees the temperature, the year through. Some of the coffee lands on Hawaii lie 1,000 to 2,500 feet above sea level, and you may reckon a lowering of the mean temperature of about three degrees for one thousand feet. The difference will be less in the daytime, but greater at night.

The first question a prospective immigrant will ask is, Can I work in such a climate? I believe that it is safe to answer in the affirmative, whatever be the character of the work. The danger is that if you come from a country where climate forbids work of a certain kind for days and weeks together, you will overexert yourself, from the instinct to make the most of the present exceptionally favorable opportunity. When you have lived here ten years, you may fall into the opposite error of putting off until to-morrow work that can be done as well one day as another.

Any one who has kept a weather record has learned that the thermometer alone does not indicate temperature as our sensations interpret it. Comfort depends quite as much on the degree of *humidity* as on the temperature of the air. It may be stated in a broad way that we are not likely to suffer discomfort from excessive dryness of the air. It is an air saturated with moisture which interferes with nature's provisions for maintaining in the body a constant temperature. In parts of California temperatures of 115° Fahrenheit and upward in the shade are far less distressing than the excessive heat that the Englishman complains of with the temperature no higher than 80°. In California the air is very dry, while in England it is likely to be nearly saturated with moisture.

The climate of the Hawaiian Islands anywhere near sea level, even in localities where the rainfall is excessive, is dry rather than humid. It is rarely that the air contains less than one-half the moisture it is capable of holding in invisible form. A relative humidity exceeding ninety per cent. is equally rare, and is experienced only during rain storms. One can tell what is the relative humidity, very nearly, by observing the altitude of the clouds as they hang over the mountain. It is seldom that there is anything approaching a fog at sea level. The clouds will occasionally descend so as to cover the top of Diamond Head, which is about 760 feet high, and very rarely may rest in the crater of Punchbowl, which is barely 500 feet high. More commonly, even in southerly rain storms, they maintain an altitude of 1,000 feet at least. The trade wind clouds rarely descend below the 2,000 feet limit. This simply means that, at the respective elevations mentioned, the air is saturated with moisture. It follows that one who desires it may find as humid a climate as he may choose. The resident of Honolulu, without going to an inconvenient distance from business, may suit himself with a climate graduated to a nicety in this re-

spect, his home, if he pleases, at the base of parched and arid Diamond Head, or amid the luxuriant verdure of upper Nuuanu valley, the forest-covered slopes on either hand much of the time lost above the clouds.

Of course, in the one locality he will have his skies for the greater part of the year only flecked with passing clouds; in the other the blue sky will be seen half the days in the year only fitfully in glimpses. Honolulu itself certainly has its share of sunshine. For about two years I kept a photographic record of the amount of sunshine. Very rarely would the record show absence of clouds all day. Only twice, if I remember rightly, was there no record at all, although there were a number of cloudy days with less than an hour of partial sunshine. The record for the year shows an average of 55½ per cent., the lowest average being that of February—38 per cent.; the highest that of September—68 per cent.

The statistics of relative humidity show an average for the year 1894 of 64.4 per cent. at midday, and 78.9 per cent. at night. The figures for February were—midday, 72 per cent.; night, 83 per cent.; for August, midday, 58 per cent.; night, 76 per cent.

Wet and Dry Seasons.—In the Hawaiian Islands there are only two seasons, distinguished by the presence or absence of the trade wind. While the trade wind blows, and that is at least eight months, generally, in the year, the mountain summits are constantly wrapped in clouds, from which drop frequent showers. For points under this cloud canopy this is the rainy season, the actual rainfall depending upon the local conditions affecting condensation. In the case of a high and bulky mountain like Haleakala, the precipitation is wholly on the windward side, the clouds being dissipated before they can reach the sheltered side, where rain with a trade wind blowing would be simply a miracle. If the mountains are only three or four thousand feet high, as on Oahu, the clouds form as the air is lifted over their summits, and pour down rain chiefly on their leeward slopes. From the cloud mantle which envelopes day after day the mountain top, the stronger gusts of wind tear away tattered fragments which are borne to leeward, trailing after them fringes of rain and mist. This is the explanation of those showers which take the *malihini* (vernacular for tenderfoot) so by surprise, the azure of the sky in the south and west quite untroubled—the unclouded sun shining on unconcerned, not forgetting, however, to paint in the background of mist, sometimes apparently on what seems clear blue sky, gor-

geous fragments of rainbow. The Hawaiian names this *ua kamaaina,* rain that is native to the land, in contradistinction to the storms that come from without. In Honolulu, through the summer months, these trade wind showers, coming at all hours of the day, generally as a mere sprinkle of rain, but more numerous and much more heavily freighted in the night, serve to mitigate the tendency to drought, and are sufficient often to keep the grass green on the hills. We expect in Honolulu one to two inches of rain a month from these showers, but we are sometimes disappointed. The farther *manka* (inland) you live, the more generous will be the tribute of the clouds. At Waikiki, three miles to leeward, the monthly average will be less than half an inch; at Punaleon, close to the mountains, it is about two inches; two miles up Nuuanu valley it is nearly twice as much, and two miles farther, close to the summit of Konahuanni, you expect six or eight inches, and, since this is the source of an important part of our water supply, we in Honolulu find no fault if it is ten or twelve.

On Hawaii, with the giant mountain Mannakia for a condenser, the sugar and coffee lands draw on this supply for an average of ten or fifteen inches in a month, and sometimes are favored with fifty inches or more. One station has a record for April, 1895, of two and a half inches a day for nineteen consecutive days, and a total for the month of over fifty-four inches.

It is customary to speak of the trade wind season as the dry season. From what I have just said it is evident that this is true only for leeward stations. In Honolulu, for example, the earth generally becomes parched in the summer months in spite of the frequent sprinkling it receives from trade-wind showers. When the trade wind is interrupted the atmosphere over the ocean becomes charged with vapor to a greater degree than is possible during the prevalence of a northerly wind. The weather may nevertheless be fine for weeks together, but the conditions are favorable for the development of cyclonic storms, and it is from these that the parched low lands get their only really efficient watering. These storms develop slowly. The sky becomes overcast. It may be a day or two before the clouds begin to discharge their burden, but when they make up their mind to it, there is no limit to their generosity. Sometimes the storm is accompanied by thunder and lightning, more often not. The lightning plays from cloud to cloud, seldom striking the earth. The thunder reverberates grandly, but even the most nervous are little alarmed by it.

Once only in a residence of fifteen years in Honolulu have I known lightning to strike the earth. Then the storm was one that would have done credit to Illinois. The storm may be accompanied with strong wind. More often the wind dies out entirely when the rain begins, and then you wonder where such an amount of water could have been stored. An inch or two is a common rainfall in one of these storms, but three to five inches, within twenty-four hours, is not unusual, and we may be embarrassed with a gift of eight or ten where one or two would have been very welcome. Storms like these, in the nature of things, cannot last indefinitely. Commonly twenty-four to thirty-six hours is the limit of their duration; within three days at most the clouds discharge their burden, and then succeeds a fortnight of sunshine.

These storms may have nothing directly to do with the moon, but they are apt to recur month after month at about the same date, or the interval may be one or two weeks.

A few figures will bring out more clearly the contrast of seasons there were in Honolulu 150 days of rain record, with a total rain- in respect of rainfall in places quite close together. Last year fall of 37.61 inches. At Waikiki, three miles to leeward of the Honolulu station, there were only 65 days of rain record, rainfall 21.83 inches. At Luakaha, four miles inland, with 148 days of rain record, the rainfall was 89.75 inches. Now, if we omit from the record the ten days of the principal storm rains, we shall have remaining for Honolulu 22.55 inches; for Waikiki 7.29 inches; for Luakaha 68.29 inches, representing mostly rain accompanying trade winds (*ua kamaaina*).

During the same period Olowalu, under shelter of the west main mountain, recorded 10.70 inches of rain, there being but seventeen days of rain record; Olaa, with Mannakia as a condenser, had rain on 255 days out of the 366, reporting altogether 176 inches, and this was by no means a record-breaking year. During the four months, April, May, June and July, Olowalu had no rain at all, while at Olaa there was more than 72 inches and only nine days without a rain record (only four more with less than 0.10 inches).

Once more: On opposite sides of the same island, in April, 1895, Olowalu reported 0.16 inches of rain, while Hana claimed 23.54 inches, with a memorandum that, of this, 21.13 inches fell on a single day, and 14.30 of it *in four consecutive hours!*

Evidently, as regards humidity of climate, the Hawaiian Islands offer a wide range of choice.

One word only on the important subject of our winds. During the winter months, we take what comes in that line; about half the time it is a light southerly breeze, against which the people of Honolulu have an inveterate prejudice. The discomfort it brings to sensitive subjects is probably due more to the moderated humidity of the air than to any malarial influence. At any rate there is a sense of strangeness as long as the wind is wanting in our environment. During the spring months, before the trade wind is fully established, we expect more or less blustering weather, keeping up the traditions of March wind. In April or May, however, the wind settles down to a steady pace, a good stiff breeze, which sometimes stirs up more dust than is agreeable, but which insures for city dwellers a salubrious air. Its velocity is commonly from ten to twenty miles an hour. In some exposed localities it blows thus with so little interruption that trees, sugar cane, the grass itself, all lean strongly to leeward. Under shelter of the higher mountains there are regions where only accidental breezes blow. On the west coast of Hawaii land and sea breezes are almost as much a matter of course as the rising and setting of the sun.

When vitality is low and the system needs repose rather than stimulation, a climate subject to no extremes, inviting one continually into the open air, bright but not excessively hot, breezy yet reposeful, is worth crossing an ocean to find. Not a few have experienced its health-restoring powers. When the increased demand shall warrant the establishing of sanitariums not alone in Honolulu, but in the more bracing atmosphere of the mountains of Mani and Hawaii, we may expect to be called on to extend hospitality yearly to hundreds of health seekers, each one of whom will send others on the same errand.—From the "Physician and Surgeon," December, 1897.

DOES IT HURT?—The dentist whistled merrily as he went about his work. It seemed as if he knew that he would have to do the whistling for two and was rather glad of it.

First, he put the patient in a chair and then he tipped the chair back until his victim was helpless. After that he did a little probing with an exaggerated knitting-needle until the patient gave a

jump that nearly lifted him out of the chair, whereupon he inquired in a surprised tone:

"Does it hurt?"

"Does it hurt?" repeated the patient. "Well, I should think it did."

"Oh, well, that will be all right now," returned the dentist with an air of calm confidence, as he got out a rubber dam and proceeded to make the patient speechless.

Then he resumed his whistling, while he was getting an array of tools out in front of the patient and otherwise doing what he could to make him feel uncomfortable. A little more probing followed, and when he had one of his sandspikes located on a nerve he called an able-bodied boy in from the next room and let him use a lead mallet on the other end of the spike, the idea probably being to strengthen the boy's muscles so that he will be in good trim for a tackle when the next football season gets here. Twice he stopped to ask, "Does it hurt?" but, of course, a rubbery, blubbery sound was the only answer.

The steam drill came after fifteen or twenty minutes of rock excavation by hand, and, when it struck, the patient jumped so high it seemed as if a blast had been touched off.

"Does it hurt?" asked the dentist in the same tone of sorrowful inquiry, and it was evident from the way the rubber dam moved that the man behind it was endeavoring to say something.

Of course there comes a time when even the patience of a man in a dentist's chair may be exhausted, and now and then the man with the triumphant smile and the corkscrew tools overplays himself, as it were. It was, according to the best information at hand, just after the dentist had said, "Does it hurt?" for the eleventh time that the man in the chair tore off the dam and began operations on his own account. Not more than five minutes later he stood over a bruised and disheveled dentist and delivered himself as follows:

"I ain't kickin' about bein' hurt. I kin stand the hurt. I allus expect to git hurt in a dentist chair, but there ain't no dentist livin' kin drive spikes into me an' then gloat over it an' git away without gittin' hurt some hisself. Now, if you want to git up here an' 'tend strictly to business an' just take it for granted that when I jump four feet I ain't doin' it to amuse you, come ahead. But I don't want no more dum fool questions an' no more gloatin', 'specially when you've got me gagged an' on my back."—Chicago "Post."

MEDICAL EXCERPT.

By T. P. Corbally, A. M., M. D.

WHEN DOCTORS DISAGREE.

He looked at my tongue and he shook his head—
This was Doctor Smart—
He thumped on my chest, and then he said:
"Ah, there it is! Your heart!
You mustn't run—you mustn't hurry!
You mustn't work—you mustn't worry!
Just sit down and take it cool;
You may live for years, I cannot say;
But, in the meantime, make it a rule
To take this medicine twice a day!"

He looked at my tongue and he shook his head—
This was Doctor Wise—
"You're liver's a total wreck," he said,
"You must take more exercise!
You mustn't eat sweets,
You mustn't eat meats,
You must walk and leap, you must also run;
You mustn't sit down in the dull old way;
Get out with the boys and have some fun—
And take three doses of this a day!"

He looked at my tongue and he shook his head—
This was Doctor Bright—
"I'm afraid your lungs are gone," he said,
"And your kidney isn't right.
A change of scene is what you need,
Your case is desperate, indeed,
And bread is a thing you mustn't eat—
Too much starch—but, by the way,
You must henceforth live on only meat—
And take six doses of this a day!"

Perhaps they were right, and perhaps they knew,
It isn't for me to say;
Mayhap I erred when I madly threw
Their bitter stuff away;
But I'm living yet, and I'm on my feet,
And grass isn't all that I dare to eat,
And I walk and I run and I worry, too,
But, to save my life, I cannot see
What some of the able doctors would do
If there were no fools like you and me.
—S. E. Kiser in Cleveland Leader.

La Tyrosine.—M. Phisalix has sent to the Académie des Sciences an interesting communication ("Progrès Médical," 12th of February) regarding the action of "La tirosine, vaccin chimique du venin de vipère."

In a recent communication which appeared in the "Comptes rendus de l'Académie des Sciences," 13 December, 1897, he showed that the cholesterine, taken from billiary calculi, exerts a powerful influence on the poison of vipers and renders it harmless to the individual infected. Vegetable cholesterine, discovered by M. Arnaud, in the carrot, possesses the same properties. The exposition of these facts gives rise to a great number of problems. But before examining the subject I have endeavored to ascertain if there may exist other chemical vaccinal matter in definite organic compounds taken from vegetables and animals. Among these latter there is one that acts a very important part in the constitutive formation of the albuminoidal materials of which it constitutes the elementary principle: that is tyrosine. This substance exists in great abundance in certain vegetables, particularly in the tubers of the dahlia, and in a variety of mushroom, the *russule noircissaute*. It is from these vegetables that M. G. Bertrand has extracted it in a state of perfect purity, as described in a communication to the Société Chimique de Paris, tome xv., 1896. He has kindly given me a quantity sufficient for the study, of which I am about to show the principal results.

Animals inoculated with an emulsion of tyrosine in water, may be tested at the expiration of twenty-four hours after the administration of the antidote, with a dose of the poison that would be fatal in five to six hours; they do not experience any of the gen-

eral symptoms of poisoning; the temperature is not lowered; sometimes, however, some local trouble may be manifested. Five milligrams of tyrosine is sufficient for the vaccination of a guinea-pig; but it must be remembered that the immunity is more or less complete and durable in proportion to the strength of the dose. In general, with 10 to 20 milligrams, immunity is well marked after twenty-four hours; it may then last for twenty-five days. Sometimes, however, it has ceased after the expiration of fifteen days.

If injected at the same time as the poison, but at a different part of the body, the tyrosine may retard death for many hours, but cannot prevent it; therefore it is not an antitoxin; nor is it a chemical antidote to the poison; for if mixed with the poison it does not destroy it, nor does it, in the least, lessen its virulence.

From all these facts it results clearly that the tyrosine may be considered as a new chemical vaccine, rendering the individual perfectly protected against the poison of serpents. In regard to the tyrosine obtained from the dahlia, it would be reasonable to suppose that the juice of the tubercles in which it is in solution should act as the vaccine. That is indeed what occurs. One or two cubic centimeters of the juice freshly pressed out to vaccinate the guinea-pig affords perfect protection against a fatal dose of the poison. But if the tyrosine alone acted, about 10 cubic centimeters of the juice would be necessary, for, accordinfg to M. Bertrand, the tyrosine is in solution in it, in the proportion of half a gram to the litre, and it requires 5 milligrams to produce the necessary vaccinal effect. It is probable, therefore, that other substances help to confer on the dahlia its antitoxic effects. The composition of the juice is, besides, very complex, and its physiological study requires further investigation. In the meantime it is interesting to point out these facts, as they are the first instances of the kind known, of a vegetable, the cellular juice of which possesses the property of protecting against the venom of serpents.

PAIN IN OTITIS.—Dr. George H. Powers, Professor of Opthalmology and Otology in the University of California, San Francisco, referring to the treatment of pain in otitis ("The Medical News"), says: "At my first visit I found a copious discharge of bloody serum from the ear, with hardly a trace of pus. He suffered from severe cephalalgia, but there was no special tenderness in or about the ear, and no swelling. Thorough cleansing of the

meatus with dry cotton relieved the pain in the head remarkably, and with a dose of antikamnia, 10 grains, he slept some hours."

RELIABLE PRODUCTS.—"Some manufacturers, like the ANTIKAMNIA CHEMICAL CO. and THE IMPERIAL GRANUM FOOD CO., are making conscientious efforts to keep the people from buying their products except upon the advice of physicians, are rigidly excluding their advertising from the general public—and so deserve the hearty support and encouragement of the medical profession. Of some others, who are reaching out for the 'dear public' as well as the 'dear doctor,' as much cannot be said."—"American Journal of Surgery and Gynecology," February, 1898. Food and medicines advertised in the newspapers are unreliable and often dangerous: they should be avoided.

VALUABLE TREE OF NEW CALEDONIA—RIVALS THE EUCALYPTUS.—Commercial Agent Le Mescam, at Nouméa, New Caledonia, reported some time ago that he had received requests from citizens of divers Southern States for seed of the niaouli tree of New Caledonia. This tree (*Melaleuca leucodendron*) is the characteristic wood of this country. It blooms in January and June. Its wood is of a reddish color and hard; it works well, more especially for wheelwright purposes. It has a suberous or cork-like bark, and replaces cork in some of its usages. The leaves are employed for medical purposes; when distilled, they give an essence which is a powerful antiseptic. It is generally admitted that the exceptional salubrity of New Caledonia is due to the essence of this wood. The vicinity of swamps is not dangerous to health here. It is probable that the above facts are known to some residents of the United States, hence the requests for seed which have reached me. I send a small parcel of the niaouli seed to the Department of Agriculture through the United States dispatch agent at San Francisco. The seed is still mostly attached to the boughs in its pods. These should be bruised before planting. Each pod contains a large quantity of seed, which are very small and shaped like a comma. They should be sown in the spring in hotbeds of light earth, well watered at all seasons, and always kept from frost. The young plants are ready for transportation in fifteen months after sowing, when no more care is necessary in climates not subject to frost.

WHAT IS CHOCOLATE?—What great events from little causes spring! A penny tablet of chocolate bought at a sweet-stuff shop

in Denmark Hill has already led to a prosecution at the Lambeth Police Court, a reckless outpouring of expert testimony as to its authenticity, two adjournments, and the expenditure of considerable cerebral tissue on the part of Mr. Hopkins, who is trying the case.

The pennyworth which does duty for the bone of contention in this battle of forensic and analytical giants was purchased by an inspector of the Camberwell Vestry from the shop in Denmark Hill, and Mrs. Poole, the proprietress, is asked to explain how she can call an article chocolate which has been certified to consist of 38.8 per cent. cocoanut stearine, 26 per cent. of sugar, and less than 36 per cent. of cocoa.

For the defense, it was contended that the stearine, which was a very wholesome article of food, was necessary to fix the cocoa in solid form, while the prosecution asserts it is a foreign mixture, and as such has no business to be present in such a large proportion.

His worship again adjourned the case, to do some more thinking over it.—The London "Mail."

SUPERSENSITIVE DOCTORS.—Nothing could be more amazing than the pleas of certain physicians of New York city for the free and unrestricted propagation of consumption. They attempt no denial of the danger that exists, but rely on obviously undemonstrable assertions that the hope of exterminating tuberculosis is "a Utopian dream," or else wander off into the realm of political economy and declare that the city has no right to sell antitoxins in competition with individual manufacturers. A few of them express ludicrous horror at the thought of being asked or compelled to act as "informers," and yet many doctors before now have shown much energy in detecting and bringing to punishment members of their own profession, within as well as out of the recognized schools, who violated State and municipal laws, or that strange thing known as the "code of medical ethics." The real explanation, of course, for this outrageous assault upon the Board of Health is the fear of offending and losing profitable patients. A suspicious observer might see in the onslaught evidence of a desire to prevent even an attempt at decreasing the prevalence of a disease which makes more "business" than any other for doctors

and their partners, the druggists and the undertakers, but this would probably be going too far. No physician, however, has a right to resent even that charge if he has put himself on record as saying that the failure of efforts to extirpate consumption, made in Italy over a hundred years ago, is an argument against renewing them here and now. The man who gravely utters a statement like that is beyond the reach of anything except denunciation as a public enemy.—New York Times.

COLLAPSED AT PROPOSAL.

A man who had long lived on Cape Cod, some years ago, on visiting Boston, introduced himself as follows:

"My name is Ichabod Eli Erastus Pickrel; I used to keep a grocery store deown Cape Cod. Patience Doolittle, she kept a notion store, right over opposite. One day Patience come into my store arter a pitcher of lasses, for home consumption (ye see, I'd had a kind of a sneaking notion arter Patience for some time), so, ses I, 'Patience, heow would you like to be made Mrs. Pickrel?' Upon that, she kerflounced herself rite deown on a bag of salt, in a sort of kniption fitt. I seased the pitcher, forgetting what was in it, and soused the molasses all over her, and there she sat, look-ink like Mount Vesuvius, with the lava running deown its sides; ye see, she was kivered with love, transport, and molasses. She was a master large gal, of her bigness, she weighed three hundred averdupoise, and a breakfast over. She could throw eanermost any feller in our neighborhood at Indian hugs. Arter awhile she kum tu, and I imprinted a kiss right on her bussers—that is, as near as I could for the molasses, and twan't more than a spell and a half before we caught a couple of little Pickrels. The whooping cough collered one of them, and snaked him rite eout of town. The other one had a fight with the measles, and got licked. Mrs. Pickrel took to having the typhus fever for a living, and twan't more than a half a spell before she busted up and left me a discon-solate wider-er-er. If you know of any putty gals that is in the market, just tell them that I'm thar myself."

EDITOR'S TABLE.

SANITARIAN, APRIL NUMBER, 1898.

☞ ALL correspondence and exchanges and all publications for review should be addressed to the Editor, DR. A. N. BELL, Brooklyn, N. Y.

NATIONAL QUARANTINE.

The Caffery bill still hangs fire at the time of this writing. It is opposed by a two-fold contention: by those who contend for the States' rights to have yellow fever or any other infectious disease and to maintain quarantines for revenue, and those who would supersede the Marine Hospital Service at all hazards. The former are apparently led by the State Health Officer of Florida; the latter by the doughty editor of the "Journal of the American Medical Association," who uses it as a means of expressing his own self-importance and personal animosities from the standpoint of an Illinois insane asylum, where, though he is superintendent, he indulges the fanciful idea that he is a sanitarian and that he is supremely qualified to fill the office which he is laboring with all his might to create. These are the forces arrayed against the Caffery quarantine bill, which would repeal the privileges of the local health authorities and others to establish shot-gun quarantines and other obstructions to travel and commerce, because, these opponents say, such a law would confer too much power on the surgeon-general of the Marine Hospital Service. And while they thus contend they propose instead of the Caffery bill "A Bill to Establish a Commission (er) of Health," to whom shall be transferred "the service known as the Marine Hospital Service, and all laws governing the appointment to official positions in said Marine Hospital Service, and to promotions in said service, shall continue in full effect, it being the intent and purpose of this Act to continue the Marine Hospital Service in the performance of the duties for which it was lawfully created, and for such other duties as may be legally prescribed." And this *increase of power* they would confer on the commissioner, whose qualifications are that he shall be "a regularly educated physician holding a diploma legally conferred upon him by a legally incorporated medical col-

lege in the United States; he shall have had at least ten years' experience in the practice of his profession, and shall be learned in sanitary science, and shall hold a membership in one or more reputable sanitary or medical societies or associations in the United States."

The inmate of the insane asylum referred to fills the bill. Moreover, *his* competency has been well tested by the success of his iconoclastic service in overcoming the whilom National Board of Health and his revival of sixteenth century practices by the cordon he establishes around Brownsville, confining the people to that yellow fever infected locality in 1882; and the courage he displayed in stamping out the disease there—by telegraph message to the officer in charge that it would probably be safe for him and his working force, *after the beginning of cold weather in November*, to go into the city and clean up!

It is for such a commissioner that "A Bill to Establish a Commission of Public Health" (by this misleading title) would provide.

SOME RECENT DEVELOPMENTS IN SCHOOL SANITATION.

Schoolhouse Drinking Cups have been long recognized as a probable means of spreading diphtheria and other contagious diseases affecting the mouth and lips. In summing up the results of the medical inspection of the New York city schools, for the quarter ending June 30, 1897, in our September number following, it was shown that of the 4,183 children excluded from the public schools on account of sickness during that quarter, 265 were for diseases liable to be communicated by the use of the common drinking cup —diphtheria, croup, scarlet fever, whooping cough and mumps. Of other diseases, more or less liable to be spread by the same means, there were: Cases of measles, 51; chickenpox, 93; and contagious diseases of the eyes, 702.

In the same relation to adults—to all who use them—are the drinking cups and tumblers common to public places; railway depots, ferry houses, hotel rotundas, and restaurants, manufacturing establishments, etc., where persons afflicted with consumption, scrofulous and syphilitic diseases of the mouth and lips indiscriminately use such cups and glasses! The mere statement of the practice suggests its danger. And so, too, the railway drinking cups and glasses, which should be avoided as much as possible—

for these, in default of a head of water, do not fall within the scope of the "Drinking Fountain" designed to do away with the drinking cups of schoolhouses and public places.

The Drinking Fountain is an ingenious device recently invented by a citizen of Rochester, N. Y., which wholly supplants the use of cups and other drinking vessels in public places. It consists of a marble pedestal about three and a half feet high, capped with a funnel-shaped basin twelve inches in diameter connected with the water supply. Upon pressure of a lever at the base of the basin a jet of water shoots up from the centre of the basin and into the mouth when held over, and from this—the jet being small and without spatter—with very little tact thirst may be abundantly satisfied without the intervention of a drinking vessel of any kind. It admits of no contact of the lips with the jet-pipe or any other portion of the apparatus—the water flows from the supply pipe through the jet directly into the mouth; and all waste into the bowl immediately flows off by an escape pipe—none is allowed to accumulate.

The fountain is highly commended by the Health Officer and members of the Board of Health of Rochester, and others who have examined it.

A movement is on foot to have it placed in all the public schools of the city. One has been placed on the first floor of the City Hall, and measures are in process for setting it up in other public places.

Accepting the testimony of the health authorities of Rochester, the "Drinking Fountain" is a pre-eminently clean thing in a strict sanitary sense. It should wholly supplant the drinking cups in the public schools and in other public places provided with water supply, as a means of preventing the spread of contagious diseases. It is supplied by the Hyde Fountain Co., Rochester, N. Y.

Lice and Nits.—The utmost personal cleanliness and parental care does not always protect every child from the invasion of a hostile host of vermin.

It is not a pleasant subject to discuss and imbues the majority with aversion and disgust, even if Burns did write poetry to a louse.

Vermin and filth in the minds of the majority are synonymous, but while vermin breeds in filthy, uncared for places, they are not averse to a change of habitation, even if it is clean, and like the seven cast-out spirits, they like to enter a place that is swept and clean, so to speak.

Among children especially the danger of becoming a host or hostess at some time of these irritating pests is great, and few escape.

Infants may get them from an untidy nurse, or one who visits others infested with them; children may get them from other children at play, or from playthings; but the pupils of the public schools are most liable to their ravages, taking them from other children, by direct contact or by an interchange of clothing or books, or from library books, etc.

The clothes racks in public schools may also become infested by the migration of the insects from infested clothing or hats into the cracks or upon the hooks and slats and then upon other clothing.

This applies also to bed vermin, which may be transported from infested rooms to the schoolroom and thence carried to otherwise clean rooms. Library books may also bring them into the home, and passengers in cars and other public conveyances may pick up these disagreeable things.

In view of these facts, the work undertaken and now in progress by the Boston Board of Health is most praiseworthy and should meet with the endorsement and co-operation of all who have children in the schools.

Large numbers of children have already been examined by the school inspectors, and such as have been found infested with lice have been forbidden school attendance until measures have been taken to render their presence harmless to other children.

To aid in this work, instructions have been given to parents for the extermination of the vermin and suggestions for the prevention of their recurrence.

To *kill* lice and nits the Boston Board of Health directs the use of crude petroleum, as follows:

Wet the hair thoroughly for three hours with crude petroleum, of which half a pint may be obtained at a drug store. Then wash the whole head with warm water and soap. Repeat this process on three successive days. The nits may then be removed by combing the hair very carefully with a fine-toothed comb wet with vinegar. Repeat the combing for several days until no more nits can be found. To make the treatment easier and more thorough, the hair may be cut short if there is no objection. All the children in a family are likely to be affected, and should also be treated in the same manner. Brushes and combs should be cleansed by putting them in boiling water for a few minutes.

At first some of the parents were offended, although the delicate subject was handled in such a manner as to spare their feelings, but as the work has progressed many who bitterly complained and opposed this sanitary measure have spoken and written words of gratitude and praise.

The work was begun quietly and with the sanction and co-operation of Mr. Seaver, superintendent of schools, who sent circular letters to each of the principals of the schools relating to the matter.

An 8 per cent. solution of creolin is also in use, as well as a 6 per cent. solution of carbolic acid, although the latter allows the nits to hatch. The most effective remedy, although possibly accompanied with danger, especially if there are open sores, is a 1 to 5,000, or as strong as 1 to 1,000 solution of bichloride of mercury (corrosive sublimate). This may be procured at the drug stores in tablets ready for use.

An infusion of staphisagria, thoroughly applied, is also a harmless but often effectual remedy.

Whatever remedy is used, it must be persistently persevered in and must be applied with a frequency that will thoroughly relieve the evil, not leaving the ova to hatch, by discontinuance for a while.

By using some of these efficient remedies the danger of temporary dismissal from school may be averted by many children, and parents should see to it that measures are taken to cure the evil if it exists or to prevent its occurrence.

In the "Medical and Surgical Journal" Dr. Edward M. Greene gives some results he obtained in the Bowdoin school, on Beacon Hill. The school is on Myrtle Street, and the great majority of the children there come from respectable families, although there is a considerable element of the poorer classes represented. They were all girls, except some 50 boys in the primary grade.

The number of children examined in this school was 756, with the following result:

	Number.	Per cent.
No nits	200	26.0
A few nits	234	31.0
A considerable number of nits	269	35.5
Very large number of nits	53	7.0

A dozen or more of these children showed considerable eczema of the face or scalp and enlarged cervical glands, resulting from the presence of lice. These children all received their cards indicating their condition to the parents before the Christmas vacation. Some two weeks later a re-examination of 509 of them showed the astonishing and discouraging result of only 26 children free from nits. About a quarter of the whole number stated that no treatment whatever had been given them by their parents. The 483 who still had nits were at once sent home, with the result that the parents began treatment in dead earnest.

A few parents were unreasonable and refused to be pacified. In some 30 or 40 families the mothers declared that the inspector had made a mistake. In all these cases but one the inspector showed the parents or children the nits which they had failed to find. In the solitary exception the child was not brought to the inspector until two weeks after the time at which he had declared that a few nits were present. In several cases children desired to

return to school on the strength of a certificate signed by a physician to the effect that no nits or lice were present. These cases were referred to the inspector, who found that in each case ova were present.

One woman, to make her case sure, sent her child back to school with certificates from four physicians, some of whom were connected with our best hospitals and dispensaries, and some with with the poorest. Happening to be in the building when the child arrived with these documents, I found she still had nits, and, with her consent, took her to the Boston dispensary, where Dr. Post and Dr. Hastings certified in writing that the child had nits.

Among the amusing protests received from parents was the following: A small boy whose head was found free from pediculi reported to his parents that the doctor had examined his head and found "nothing in it." The fond mother, understanding that her hopeful offspring had been declared an idiot, rushed to the master and protested against such treatment.

Dirty Towels and Nasty Books.—The sanitary condition of the books, buildings and towels furnished at the schoolhouses in Lynn was discussed at the meeting of the school board of that city a month ago, when it was shown that only two towels a week were furnished to some of the schools, and that at the high school, with over 700 pupils, only two towels—one for the girls and another for the boys—were placed in the toilet rooms each week. During the recent storm the towels were not changed for two weeks.

The towels have been found in a very filthy condition and were liable to breed disease. The committee on supplies was instructed to have all the towels in the schools changed at least twice as often as at present.

More than 9,000 books were reported as unfit for use, being torn and filthy and extremely unhealthful for the children to handle. It was voted to petition the city government for permission to dispose of the books.

GRADUATES IN MUNICIPAL HYGIENE.

New Brunswick, Feb. 7.—The trustees of Rutgers College have decided on a departure in the line of college endeavor. The plan is to promote the purposes of the sanitary laws of the State

by conducting examinations and granting certificates in municipal hygiene to officers of local Boards of Health, sanitary, factory and plumbing inspectors, and those who may seek appointment to these places. The certificates will indicate the degree in which the holders are qualified to perform the duties relating to the promotion and the protection of the public health required by the laws of the State, and by the rules, regulations and ordinances of local Boards of Health. Examinations will be held on the first Wednesday of the months of March, June and October in the college buildings in New Brunswick. They will be both written and oral. The examinations are to be open to men and women.

The Board of Examiners will be composed of Prof. Cyrus F. Brackett, M. D., LL. D., of Princeton University, who will examine in plumbing, drainage and sanitary construction; William M. Lanning, A. M., of Trenton, sanitary laws, ordinances, rules and regulations; William K. Newton, M. D., of Paterson, preventable diseases, isolation and disinfection; John L. Leal, A. M., M. D., of Paterson, nuisances and disposal of waste; Prof. F. C. Van Dyke, Ph. D., and Prof. E. B. Voorhees, A. M., of Rutgers, lighting, heating, ventilation and food.

MORTALITY AND MORBILITY REPORTS AND REVIEWS.

Correspondents under this head are particularly requested to be as prompt as possible.

ALABAMA.—W. H. Sanders, M. D., State Health Officer, Montgomery.

CALIFORNIA.—C. A. Ruggles, M. D., President, Stockton; W. P. Matthews, M. D., Secretary, Sacramento.

San Francisco, 360,000. Report for January: Deaths, 650—127 under five years of age. From consumption, 98; acute pulmonary diseases, 112; from zymotic diseases, 52; diphtheria (and croup), 17; typhoid fever, 4. Annual death rate, 21.6. Contagious diseases reported during the month: Diphtheria, 61; scarlatina, 27.

The State quarantine, in accordance with instructions from Washington, March 3, was superseded. Collector Jackson, Surveyor Spear and United States District Attorney Foote support the action of Deputy St. John. They declare that the Federal law and the action of the President in providing a quarantine station and quarantine officers at this port have entirely superseded the State quarantine.

Los Angeles, 103,000. Report for January: Deaths, 128. From phthisis, 21; acute pulmonary diseases, 13. Annual death rate, 14.91. "N. B.—Of the 21 deaths from pulmonary consumption 12 had lived here less than 10 years."

COLORADO.—Denver, 160,000. William P. Munn, M. D., Health Commissioner.

Colorado Springs, 22,000. B. B. Glover, M. D., Health Officer, reports for February, 17 deaths. From pneumonia, 4; from tuberculosis, 5—contracted elsewhere. Annual death rate per 1,000, excluding tuberculosis, 8.22.

CONNECTICUT.—Professor William H. Brewer, Ph. D., New Haven, President; Prof. C. S. Lindsley, M. D., Secretary, New Haven. The Secretary's bulletin for February: Deaths reported, 1,026, 127 less than reported in January, 106 less than in February of last year, and 127 less than the average number of deaths in February for the five years preceding the present; deaths under five years of age, 207.

The death rate was 13.8 for the large towns; for the small towns, 14.1, and for the whole State, 13.9.

The deaths from zymotic diseases were 83, being 8.0 per cent. of the total mortality.

Meteorological observations: Barometer—Monthly mean, 30.07 inches; highest, 30.62 inches; date, 4th; lowest, 29.13 inches; date, 16th; monthly range, 1.49 inches. Thermometer—Monthly mean, 31 degrees; highest, 57 degrees; date, 10th; lowest, 2 degrees; date, 2d; absolute range, 55 degrees; greatest daily range, 30 degrees; date, 5th; least daily range, 2 degrees; date, 22d; mean daily range, 14 degrees; accumulated excess of daily mean temperature since Jan. 1st, 132 degrees. Monthly mean humidity, 79 per cent. Monthly mean dew point, 24.

DELAWARE.—Wilmington, 72,500. Joseph P. Pyle, M. D., President; Chas. H. Ten Weeges, Secretary and Registrar of Vital Statistics. Report for the year 1897: Deaths, 1,322, 118 in excess of the year previous. Death rate of 18.23 per 1,000 inhabitants. The deaths from zymotic diseases were 197, which gives a percentage to the whole number of deaths of 14.90 %; 79 were from diphtheria, and from typhoid fever, 23.

Of the deaths 345 or 26.9 % were in the first year of life; 66 or 4.2 % in the second year; and between the years two and five 111 or 8.3 %, or more than 39 % having died during the first five years

of life. Of the causes of death, phthisis and pneumonia proved the more fatal. In the former there were 114 deaths or 8.5 %; and in the latter 104 or 7.8 % to the whole number of deaths.

The sanitary condition of the city believed to be exceptionally good, excepting for the causes that eventuate in diphtheria, many cases proving lethal, thus increasing the death rate of the previous year from 16.62 % to 18.23 % per 1,000 inhabitants. All precautions that this Board have deemed wise have been instituted to prevent the spread of contagious diseases.

DISTRICT OF COLUMBIA, 276,963—88,176 colored.—Wm. C. Woodward, M. D., Health Officer, reports the mortality for four weeks ending February 26, 468. Death rates, 14 for the white, 28.2 for the colored, and 21.1 for the whole population. Deaths from zymotic diseases, 50; from consumption, 43.

For the year 1897 there were 5,737 deaths, of which 3,216 were of whites and 2,521 of colored. The corresponding death rates were, therefore, 20.71 for the population as a whole, 17.04 for the whites, and 28.59 for the colored. Upon comparing these figures with those for preceding years, we find that only one year during the past twenty-two years, the entire period for which reliable figures are available, has the general death rate fallen lower, having been 20.57 for the fiscal year 1895. At no time during this period has the death rate for the whites been lower, and only once, in 1895, has there been a better showing among the colored people.

Distributing the deaths according to sex, the death rate for white males is found to be 19.28, while for colored males it is 33.07. Among the female portion of the white race the death rate was 14.79, and among the colored 26.78. The death rate of the males as a whole was 22.72, and that of the females 18.79.

By computation, the white population under five years of age amounted to 16,152, and the colored to 8,321. The corresponding death rates per 1,000 were 52 for the whites, 121 for the colored, and 76 for the entire population. The principal causes of death were: diarrheal diseases, 324 deaths; acute lung affections, 332; tubercular diseases, 157; convulsions, 106; congenital debility and premature births, 216.

The number of deaths from tuberculosis was 1,053, of which 776—13.35 per cent. of the total mortality—were from pulmonary consumption.

FLORIDA.—State Health Officer Dr. J. Y. Porter reports (Jacksonville "Times," March 3) for the year 1897: The mortality of the State, from statistics furnished the Board by the 700 physicians of the State, was 4,123, being 12.16 to 1,000 population. The number of births was 6,754, and the number of marriages 4,611.

That "the Florida system of quarantine or contagious epidemic disease prevention has obtained success in preventing epidemics, by promptly surrounding those cases of contagious diseases which have occurred, by inspiring confidence on the part of the citizens of the State in the sufficiency of the methods followed, by discouraging all exhibitions of fear—making panics possible—and by securing freedom of movement and uninterrupted commercial relations within the State lines. * * * The revenue derived from inspection and disinfection of vessels now being amply sufficient to defray all necessary expense incident to maintaining this branch of the service in a thoroughly efficient manner."

And in advocacy of this tax on commerce to maintain the system and its superiority to the national system, he states with reference to the recent epidemic: "There is no proof that Ship Island, in the hands of the United States Marine Hospital Service, did not, through inadvertence, admit yellow fever into Mississippi." Nor, he might have added, is there any proof that it was not inadvertently introduced—by some shift of position—from Florida.

ILLINOIS.—L. Adelsberger, M. D., President, Waterloo; J. A. Egan, M. D., Secretary, Springfield.

Chicago, 1,619,226. A. R. Reynolds, M. D., Commissioner, reports: Total deaths from all causes during the month of January, 1898 (white, 1,800; colored, 35), 1,835; monthly death rate, January, 1898, per 1,000 of 1,619,226 population (white, 1.12; colored, 1.54), 1.13; annual death rate, twelve months ended Jan. 31, 1898, per 1,000 of mean population (white, 13.23; colored, 21.98), 13.34.

Deaths from diphtheria, 68; typhoid fever, 29; influenza, 21; consumption, 202; other tubercular diseases, 27; pneumonia, 248.

With reference to influenza, the Commissioner remarks:

"After a period of unprecedented good health and low death rate Chicago is threatened with an epidemic visitation of one of the diseases most dreaded by sanitarians. Against influenza or 'la grippe' the preventive measures of sanitation and public hygiene are powerless. As a recent writer says: 'We can see it afar off

and trace its progress, but can do nothing to stop it; and it smites the sanitarily pure with a severity on the whole much the same as it shows to the rest of the world.' "

INDIANA.—H. Jamerson, M. D., President, Indianapolis; J. N. Hurty, M. D., Ph. D., Secretary, Indianapolis.

Bulletin for the quarter ending December 31: Marriages reported for the quarter, 6,172; births, 7,776; deaths, 3,959, showing an increase of seventy over the corresponding quarter of last year. Possibly this increase is due to more accurate reports. Of the ninety-two counties in the State, the following seven have failed to send reports: Clark, Randolph, Fountain, Greene, Lake, Morgan, Daviess.

The last named county presents as an excuse for its failure to report that the records were accidentally burned during the holidays. The failure in the other counties named was due to a change of health officers. As it is not the new officer's duty to make out the reports for any part of his predecessor's term, and as the law gives the new officer possession of the books on January 1, and further, as the reports cannot all be in until fifteen days after the close of each quarter, complications will always arise unless considerable public spirit is found in both the retiring and succeeding officer. Contagious disease and deaths: There were 3,727 cases of contagious diseases reported during the quarter. They are given, with the deaths therefrom, as follows: Diphtheria, 877 cases—259 deaths; scarlet fever, 642 cases—27 deaths; typhoid fever, 586 cases—302 deaths; measles, 347 cases—no deaths; phthisis, 439 deaths.

IOWA.—J. I. Gibson, V. S., President, Denison; J. F. Kennedy, M. D., Secretary, Des Moines.

Bulletin for February reports: The State Board of Health met in regular quarterly session January 18th and was called to order by Dr. Guilbert, in the absence of the President, Dr. (Senator) J. M. Emmert. Dr. Carter was elected president pro tem., after which Dr. J. I. Gibson was unanimously elected President for Dr. Emmert's unexpired term—the latter having resigned from the Board in order to take his seat in the Senate.

Since the issue of January Bulletin the following diseases have been reported: Small-pox, Burlington; diphtheria, Dayton township, Iowa county; Washington township, Taylor county; Riverton township, Ringgold county; Victoria township, Cass county; Little Sioux township, Harrison county; Oak township, Mills county; Dallas township, Taylor county; Eldorado township,

Benton county; Anderson township, Mills county; Scott township, Poweshiek county; Hazleton, Malvern, Elliott, Audubon, Hubbard. Scarlet fever, Norway township, Humboldt county; Fremont township, Benton county; Washington township, Harrison county; Jefferson township, Wayne county; Charleston township, Lee county; Center township, Fayette county; Highland township, Guthrie county; Belmond, Hedrick, Lineville, Vail, Horton, Hazleton. Measles, Lorimer, Perry.

LOUISIANA.—Edmond Souchon, President, New Orleans; G. F. Patton, M. D., Secretary, New Orleans.

At the monthly meeting of the Board, February 23, the President remarked at length upon the sanitary condition of the city of New Orleans; of the work that had been done, of that in progress, and of that which was yet to be done for the healthfulness of the city; and particularly upon the aid that had been given by the Marine Hospital Service in the matter of house to house aeration and disinfection. "It now," he added, "devolves upon the city to keep the gutters clean and free from obstructions and to keep them flushed abundantly with the aid of the water works and of the pumps of the Auxiliary Sanitary Association; also keep the streets clean and to remove the garbage regularly and early."

Committees were appointed. Rules submitted by the Chief Sanitary Inspector were submitted and approved of and plans formulated for rendering them effective. Prof. Metz, city chemist, reported on the modes of preparing various disinfectants, their special usefulness and the best means of using them.

Resolutions of thanks were voted to Dr. Wyman, Surgeon-General, and Dr. Carter, of the Marine Hospital Service, for their liberal assistance in having $30,000 appropriated for the use of the New Orleans board.

Dr. Wilkinson was delegated to represent the board at the quarantine and sanitation convention to be held in Atlanta, April 12.

It was decided to put the quarantine in operation against all suspicious tropical ports on April 1, instead of on May 1, as formerly; that is, to begin it a month earlier than usual. This has been already done by Florida, and will be done by the other Gulf States and by the United States Marine Hospital Service. It is an additional precaution, which shows how determined the people of the Southern States are against the introduction of disease from abroad. It is to be hoped that in the exercise of this incidence they will not be purblind to domestic conditions.

The New Orleans Board of Trade, at its regular meeting, March 2, adopted the following:

Whereas, Owing to the interference with interstate and foreign commerce by State and local boards of health during the visitation of yellow fever in some sections of the Gulf States last fall, and the failure of co-operation or agreement by said boards upon some plan to meet the requirements of the situation, be it

Resolved, That the New Orleans Board of Trade strongly favors the passage of the Caffery Quarantine Bill, enlarging the scope and authority of the Marine Hospital Service, and respectfully urges the Louisiana delegation in Congress to give the measure prompt and energetic support.

As no agreement has been made by the different boards of health in the Gulf States to co-operate in a systematic arrangement for the protection of interstate and foreign commerce from unreasonable and unwarranted interference, and as there seems to be no disposition to change the methods in vogue during last summer, the New Orleans Board of Trade is of the opinion that national control of quarantine, as applied to commerce, is absolutely necessary; and, therefore, has indorsed the Caffery Bill enlarging the scope and authority of the Marine Hospital Service as stated in said bill, and that the measure should be passed by Congress as soon as practicable.

LOUISIANA SANITARY ASSOCIATION.

An organization under this name has been effected recently, whose purpose is set forth in the charter, as follows:

"First—By the organization of a central sanitary body with auxiliary circles in every parish in the State and its extension, until it embraces all the Southern, and particularly the Gulf and South Atlantic States.

"Second—The founding of a school of hygiene and quarantine on the Chautauquan plan of correspondence, lectures and summer institutes.

"Third—The publication of a monthly journal devoted to the objects of the association.

"Fourth—To secure through an educated public opinion the enactment of adequate health laws, laws on vital statistics, on food adulteration and water pollution, on meat and dairy inspection, on vaccination, and their enforcement; and the founding of hospitals for contagious diseases.

"Fifth—To systematically educate the people of the State to the necessity of substituting rational, scientific, uniform, maritime and

inland quarantines during periods of epidemic danger or invasion for the barbarous shotgun quarantines, which, while crippling commerce, afford at best a doubtful and insecure protection.

"Sixth—The restriction and prevention of tuberculosis and the founding of sanitariums for its hygienic-dietetic treatment."

It is pointed out by the gentlemen who are promoting this association that the enactment of any law, Federal or State, will be inoperative unless backed by a healthy public opinion. All the Federal power could not force a country town in Louisiana to carry on commercial relations with infected centres. The only remedy is to educate the masses in the fundamental principles of hygiene and by appealing to their intelligence show them that a rational, scientific method is better than shotguns, which afford at best a doubtful and insecure protection. That in view of this the effort to transfer the quarantine powers of the State upon the federal authorities is puerile and will be inoperative. It is the aim of the State Sanitary Association to get everyone in its fold, and it will depend on the voluntary contributions of the business men (who are most benefitted by its labors) for aid in carrying on its work. The State, it is urged, should aid it in its labors. Some of the leading sanitarians and specialists have consented to fill chairs in the first institute, which will be held in May in one of the larger Attakapas towns.

The officers of the association are:

President, Dr. Fred Loeber; vice president First congressional district, Dr. John N. Thomas; vice president Second congressional district, Dr. R. Matas; vice president Third congressional district, Dr. W. D. White; vice president Fourth congressional district, Dr. J. C. Eagan; vice president Fifth congressional district, Judge Gunby; vice president Sixth congressional district, Dr. F. J. Mayer.

These are the signers of the charter:

Fred J. Mayer, M. D.; I. E. Shute, M. D.; W. M. Thompson, M. D.; R. M. Littell, M. D.; B. A. Littell, M. D.; Chas. F. Boagni, M. D.; P. Foster, M. D.; W. R. Lastrapes, M. D.; J. A. Haas, M. D.; E. M. Boagni, president St. Landry State Bank; Fritz Dietlein, O. H. Terwilliger, R. A. Mayer, M. D.; A. J. Perkins, M. D.; H. C. Salles, D. D. S.; N. P. Moss, M. D.; J. D. Trahan, M. D.; J. P. Fancez, M. D.; W. W. Lesley, M. D.; F. W. Courtney, M. D.; U. Prejean, M. D.; Albert Guidry, O. P. Daly, M. D.; B. Guilbeau, M. D.; Homer Mouton, Diomel Durio, E. H. McGee, H.

Barousse, D. Roos, D. A. Dimitry, John N. Ogdon, C. J. Thompson, F. J. Pulford, D. D. S.; E. B. Dubuisson, C. H. Miller, W. F. Clopton, M. D.; G. W. Martin, M. D.; E. T. Lewis, L. E. Littel, C. E.; D. S. Edwards, Leonce Sandoz, R. Morhinveg, Ant. Dietlein, Mason McBride, Louis C. Smith, James O. Chachere, Samuel Haas, Walter S. Durke, John T. Nixon, W. J. Sandoz, attorney; J. M. Jackson, H. Armstrong, Phil L. Asher, Julian Mouton, Crow Girard, T. A. Hicks, G. A. M. Cooke, M. D.; S. L. Hebrard, W. D. White, M. D.

The charter sets forth the plan of organization in the following manner:

"Its officers and committeemen shall be such as are chosen at the annual convention of the Louisiana State Sanitary Association, to be held at the time and places to be declared by it, and that such officers and committeemen shall consist of a president, vice presidents, one from each congressional district, now or hereafter to be formed, a secretary and treasurer, and the following standing committees:

"The executive committee, finance committee, advisory council, publication committee and the board of regents of the School of Hygiene.

"Its executive committee shall consist of the officers, the ex-presidents, the regents and lecturers in the School of Hygiene, and finance committee.

"Its advisory council shall consist of delegates from each Sanitary Circle in the State, from each town council and police jury of the State, from the commercial exchanges and boards of trade, from the boards of health, from the medical, pharmaceutical and dental societies, from the colleges, from the Louisiana Chautauqua and other educational and scientific bodies, from the Press Association of the State and the Press Club of New Orleans and the Commercial Travelers' Association; the bases of representation from each to be fixed by the executive committee.

"These two committees shall, in joint session, serve as a nominating committee of officers and committeemen for the ensuing year and make such recommendations to the association as shall best secure the objects of its creation.

"These officers and committeemen shall hold office until the election of their successors by the annual meeting of the society, which shall be held at the time and place designated by the executive committee.

"The said corporation shall have all the usual and ordinary powers of a corporation necessary and appropriate to aid the objects for which it is formed; its domicile shall be in the parish of St. Landry, and citation shall be served upon the president, or in his absence upon the secretary, and it shall continue in existence for twenty-five years from the filing thereof. No member of this corporation shall ever be held or bound individually, by reason of any liability made or incurred by it, except for the amount of the annual dues, which is hereby fixed at $1 per annum; but the managers of the same may receive any voluntary contribution or donation that may be made for its use.

"The members and associates of this corporation shall consist of the subscribers and of all who may connect themselves with this association, and members cease to be such upon resignation addressed to the secretary of the society. The subscribers, active members or their representatives are entitled to be members of the annual convention, with one vote each, until the election of officers at the annual convention in 1898."

The association purposes much useful work for the present year, and its purposes and plans are such as to justify expectations of its usefulness.

MARYLAND.—John Morris, M. D., President, Baltimore; John S. Fulton, M. D., Secretary, Baltimore.

Baltimore, 506,398—73,344 colored.—James F. McShane, M. D., Health Commissioner, reports for January: Deaths, 696—a decrease of 49 compared with the corresponding month of January, 1897. Of these 533 were whites and 163 colored; a death rate of 14.84 per thousand for the former and 26.08 per thousand for the latter. The death rate per thousand for the whole population was 16.50. Fifty-two died from infectious diseases, 93 from consumption, 90 from pneumonia, 22 from bronchitis, 13 from Bright's disease, 19 from nephritis, 24 from apoplexy, and 12 from typhoid fever; 222 or 31.81 per cent. of the total deaths were in children under five years of age. During the month 528 cases of infectious diseases were reported, a decrease of 147 compared with the preceding month. Ninety deaths occurred in public institutions, of which 28 were reported as nonresidents.

The Weather.—The mean barometric pressure during January was 30.05 inches; mean temperature, 37°; total precipitation, 2.00

inches, a deficiency in precipitation during the month of 0.34 inches; prevailing direction of wind, west.

Report for the year 1897: The total deaths, from all causes, reported in 1897 was 9,329, of which number 7,163 were white and 2,166 were colored. The death rate for the whites was 16.61 per thousand of population and 28.88 for the colored. The rate per thousand for the whole population was 18.43. This is a satisfactory showing as compared with the preceding year, when the total mortality was 9,919 and the death rate 19.1 per thousand. Notwithstanding this decrease, and the fact that the city has not been visited nor threatened with any epidemic of alarming proportions, a far greater reduction could be made if the sanitary defences were improved and increased.

Deaths from certain specified diseases: Consumption, 1,047; pneumonia, 759; cholera infantum, 401; diphtheria, 350; typhoid fever, 189; diarrhœa and dysentery, 156.

"The desirability and necessity of a sewerage system having impressed itself upon our citizens, it is to be hoped that ways and means may be forthcoming to construct this much-needed improvement and protection to the public health. In the meantime legislation is urgently required regulating the construction of privies or cesspools, and I know of no subject that could engage your attention in a direction in which improvement is needed greater than the abatement of the evils resulting from these foul and badly-constructed distributors of disease."

The Board has been recently reorganized, by the Mayor's appointments, as follows: Dr. C. Hampson Jones, Health Commissioner; Dr. J. Tyler Smith, Assistant Health Commissioner; Dr. G. Lane Taneyhill, Quarantine Physician; Dr. J. J. Caddwell, Sanitary Inspector.

The reasons for this change as given in the Baltimore "Herald" of March 4:

"A reporter of the 'Herald' asked the Mayor the direct question: 'What were your reasons for not reappointing Health Commissioner McShane?' The Mayor answered: 'I think it is sufficient to say in reply to that question that this is a Republican administration. Does that answer the question?'

"It did answer the question, and answered it as clearly and as completely as Mr. Malster could have done in a volume of words."

Dr. McShane has been connected with the Health Department in various capacities for a score of years. The sanitary condition

of the city has greatly improved under his supervision, and Baltimore is conspicuous among the cities of the world for its low death rate, and the more for the reason that Baltimore is one of but very few cities in the world of like population that is unsewered and wholly depends upon surface drainage. For sewerage and drainage works Dr. McShane has assiduously labored, and it is much to be hoped that in this and the otherwise excellent record of Dr. McShane, Dr. Jones may show himself to be a like progressive sanitarian to his predecessor.

MASSACHUSETTS.—H. P. Walcot, M. D., Chairman, Cambridge; S. W. Abbott, M. D., Secretary, Boston.

Boston, 516,305. Samuel H. Durgin, M. D., Chairman of Board of Health. Statement of deaths for the month of December, 1897, 813; rate per 1,000 inhabitants, 18.89; deaths under five years of age, 214. Totals from classified causes: Zymotic diseases, 81—including tubercular diseases, 207; constitutional diseases, 172; local diseases, 437; developmental diseases, 62; violent causes, 57.

Cases of contagious diseases reported during the month: Diphtheria, 206; scarlatina, 112; measles, 51; typhoid fever, 32.

Summary for the year 1897: Population (estimated), 528,912. Deaths, 11,154; death rate, 21.08. Deaths from zymotic diseases, 1,806—percentage to total mortality, 16.19; of children under five years, 3,708—percentage to total mortality, 33.24. Deaths from diphtheria (and croup), 456; typhoid fever, 173; cerebro-spinal meningitis, 185; diarrhœal diseases, 522; scarlatina, 136; whooping cough, 39; phthisis pulmonalis, 1,289; pneumonia, 1,236.

MICHIGAN.—Hon. Frank Wells, President, Lansing; Henry B. Baker, M. D., Secretary, Lansing.

The Secretary reports for the month of February, 1898: The diseases most prevalent were rheumatism, influenza, neuralgia, bronchitis, tonsilitis, pneumonia, pleuritis, diarrhœa and pulmonary consumption. Compared with the report for January, consumption was more prevalent, being reported at 117 places, while measles was reported at 85 places, scarlet fever at 68, diphtheria at 60, typhoid fever at 53, whooping cough at 27, and smallpox at one place. Compared with the average for February for twelve years, whooping cough, intermittent fever, remittent fever, con-

sumption, scarlet fever, diarrhœa and pneumonia were less prevalent.

Lansing, Mich., March 2.—(Chicago "Record," March 3.)—Secretary Baker of the State Board of Health was notified to-day that there are forty cases of fever in the city of St. Clair, which has a population of less than 2,500. Several deaths have already occurred.

Detroit ("News"), Feb. 16: The Board of Health elected Dr. Hennaege Gibbes, of Ann Arbor, health officer to succeed Dr. Samuel P. Duffield. Dr. Gibbes came to Ann Arbor ten years ago from England to accept the chair of pathology in the University of Michigan. He held this place until two years ago, when the chair was abolished, since which time he has practised medicine in Ann Arbor. He is nearly fifty years of age, and was born in Western England. In 1884 Dr. Gibbes was appointed one of the royal commissioners to India to investigate the cholera epidemic. He refused the health officership of Calcutta, offered to him by Sir Joseph Farrar.

ROCHESTER PUBLIC HEALTH ASSOCIATION.

At a recent meeting of prominent citizens of Rochester, N. Y., Dr. E. M. Moore, being called to the chair, outlined the purpose for which those present had been called together. He stated at the outset that the credit of the movement belonged to Capt. Henry Lomb, who has been for a great many years a member of the American Public Health Association. The Public Health Association appertains to the United States as a whole and has been in existence for twenty-five years.

"That association," he said, "has been of incalculable benefit to the country, having in the past exerted great influence on legislation. But that organization is continually reaching up; we have never had a health society that reaches down into the homes of all classes. It is our idea in this movement to block out the city in several divisions and by lectures, schoolhouse work and other methods interest the whole community."

Dr. Moore next explained that the object of the first meeting was organization.

Before action was taken in this matter, however, Capt. Lomb presented a detailed statement of the plan and organization of the project contemplated. It was as follows:

"The name of this organization will be the Rochester Public Health Association.

"Object—The object of this association shall be the advance of science and the promotion of measures for the practical application of public hygiene;

"To diffuse among the people a greater and more general knowledge in regard to health, its preservation and the prevention of disease;

"To assist the State and local health authorities in the distribution of publications and in the enactment and enforcement of laws and measures as may be conducive to the realization of the objects of this organization;

"To make special efforts to prevent the spread of contagious diseases, especially consumption, partly by inducing those afflicted with this disease to use the proper precautions to prevent the communication to others, or, partly by sending them, when possible, to special hospitals, partly by disinfecting houses of such persons, and partly by assisting efforts in the establishment in special localities of special hospitals for consumptives;

"To exert the influence of the organization and its members with the respective authorities for the selection of able and efficient health boards, physicians and their assistants and employes;

"To assist the health authorities in providing for a general systematic and practical inspection of houses and other buildings;

"To have rooms provided with the publications of our own local and State and other health authorities and books and publications on health, hygiene and sanitation. These rooms also to be provided with models showing proper and improper drainage, plumbing, ventilation, arrangement of houses and other buildings and other apparatus important for health, hygiene and sanitation."

Capt. Lomb said the last clause of his statement might mean the establishment of a museum of hygiene. He said he was in favor of a very large organization, one that would reach into every street and into every school in the city. One of the main objects of the organization would be co-operation with the local Board of Health, he said.

Park Commissioner A. C. Allen moved that the nominating committee be composed of ten members, to be selected by the chair.

The motion was passed with an amendment giving Dr. Moore power to enlarge the committee if in his judgment he thought it

desirable. This committee will issue the call for the meeting at which a report is to be made.

Dr. Moore called attention to the fact that probably more than one-half of the houses of the city were improperly arranged as to drains, and that much of the sickness of the community was caused by such defects as these, of which people were totally ignorant. He approved of a system of thorough house inspection, and pointed this out as one of the aims of the organization.

MINNESOTA.—Franklin Staples, M. D., President, Winona; H. M. Bracken, M. D., Secretary, St. Paul.

Minneapolis, 192,833.—H. N. Avery, M. D., Commissioner of Health; Miss Edwina J. Peck, Registrar of Vital Statistics. Report for February: Deaths, 176—57 under five years of age; from zymotic diseases, 16; phthisis pulmonalis, 15. Annual death rate, 9. Cases of contagious diseases reported during the month: Diphtheria, 16; scarlet fever, 13; measles, 1,196; typhoid fever, 16.

St. Paul, 215,582.—Alexander J. Stone, M. D., LL. D., Commissioner of Health. Report for February: Deaths, 127—44 under five years of age. Death rate, 6.96.

MISSOURI.—E. L. Standlee, M. D., President, St. Louis; Paul Paquin, M. D., Secretary, St. Louis.

St. Louis, 600,000—35,000 colored. M. C. Starkloff, M. D., Commissioner of Health, reports for January: Deaths, 739—182 under five years of age; from zymotic diseases, 80; diphtheria, 25; typhoid fever, 4; phthisis, 86; pneumonia, 93. Annual death rate, 14.76.

March 11: The Health Commissioner again urges the necessity of classifying consumption with infectious and contagious diseases, and thus making it possible for the health authorities to take steps to check the disease. He called attention to his previous recommendation. President Meier of the Council, who is a member of the board and was present yesterday, stated that he thought Dr. Starkloff's recommendations very timely. Drs. Hughes and Merrell also advocated immediate action on the matter.

Dr. Starkloff is positive that the spread of consumption could be prevented to a large extent if the Health Department had the power to act.

NEW JERSEY.—C. F. Brackett, M. D., President, Princeton; Henry Mitchell, M. D., Secretary, Asbury Park.

Newark, 230,000. Health Officer Chandler reports for the four weeks ending February 26: Deaths, 287—85 under five years of age; from diphtheria, 6; consumption, 54; pneumonia, 37. Annual death rate, 15.87.

Paterson, 109,076. J. L. Leal, M. D., Health Officer, reports for January: 151 deaths—48 under five years of age. Annual death rate, 13.8. Deaths from diphtheria, 6; consumption, 26; pneumonia, 22.

NEW YORK.—Daniel Lewis, M. D., President, New York; B. T. Smelzer, M. D., Secretary, Albany.

By the Secretary's bulletin for the month of January, there were reported 9,632 deaths from all causes during the month, which is nearly identical with the number for January, 1897, the death rate being 17.00 per 1,000 population annually, against 17.25 a year ago. The number of deaths in early life and also from zymotic diseases is less, especially the former. The average mortality in January for ten years has been 10,500, 28.0 per cent. of the deaths having occurred under the age of five years, against 25.0 this month, and 12.5 per cent. from zymotic diseases against 10.0 this month. Compared with the preceding month, the death rate in December was 16.75, there having been 400 fewer deaths, and both the infant and the zymotic mortality were relatively the same as this month. All the zymotic diseases caused somewhat fewer deaths except scarlet fever and measles, which increased. There was an increase of 200 deaths from acute respiratory diseases, and a moderate increase in deaths reported from diseases of the digestive, urinary, circulatory and nervous systems, in all amounting to 160 deaths. From these latter causes of death there was a small increase over the number reported in January, 1897, and, while that from acute respiratory diseases is the same as then, it may be estimated that grippe, which has been reported from all parts of the State, and which usually swells these mortalities, has caused an increase in the number of deaths by about 400; it was the estimated cause of 200 deaths in December, and 300 in January, 1897. Acute respiratory diseases caused 600 less than the average number of deaths for January for ten years, during which month for that period grippe has been actively prevalent. Consumption likewise caused less than the average mortality, but the same as last month and in January, 1897. Diseases of the digestive, urinary and circulatory systems are alone credited with causing a mortality above the average. Diphtheria caused 322 deaths,

the least number for January in ten years by nearly one-half the average for that period and less than the average of the twelve months of 1897; it was the cause of nearly 4 per cent. of the mortality in urban parts of the State and little over 1 per cent. of the rural mortality. Scarlet fever and measles alone of zymotic diseases show an increase, the former limited to the maritime district, the latter of more general distribution. Numerous localities report the prevalence of epidemic jaundice. The mean average temperature was 23° for the month, or 1° below the normal, the average highest being 52°, lowest—12°. There was a precipitation of 4.19 inches, the average being 3.10, all parts of the State showing an excess except that of New York City.

New York City, 3,438,899. Nathan Straus,* President; W. T. Jenkins, M. D., and J. B. Cosby, M. D., Commissioners of Health; Emmons Clark, Secretary.

City of New York (totals), 3,438,899: Deaths, 5,128—1,743 under five years of age; death rate, 17.55; deaths from zymotic diseases per 1,000, from all causes, 108; deaths from typhoid fever, 21; scarlet fever, 104; measles, 88; diphtheria, 206; acute respiratory diseases, 975; consumption, 615.

Borough of Manhattan, 1,911,755: Deaths, 2,919—1,000 under five years; death rate, 18; deaths from zymotic diseases per 1,000 deaths from all causes, 103.40; from typhoid fever, 8; scarlet fever, 64; diphtheria, 86; acute respiratory diseases, 574; consumption, 332.

Borough of Bronx, 137,075: Deaths, 255—88 under five years; death rate, 21.45; from zymotic diseases per 1,000 from all causes, 168.50.

Borough of Brooklyn, 1,197,100: Deaths, 1,669—496 under five years; death rate, 16.45; deaths from zymotic diseases per 1,000 from all causes, 112; typhoid fever, 13; diphtheria, 103; acute respiratory, 313; consumption, 208.

Borough of Queens, 128,042. Deaths, 178—52 under five years; death rate, 16.05; deaths from zymotic diseases per 1,000 from all causes, 129.20.

Borough of Richmond, 64,927: Deaths, 107—17 under five years; death rate, 19.35; from zymotic diseases per 1,000 from all causes, 20.

*March 1 Nathan Straus resigned the Presidency, and Col. Michael C. Murphy was appointed in his stead. Other recent changes: Sylvester J. Byrne as Assistant Registrar of Records, Borough of Brooklyn, in place of Dr. West, removed; Dr. Frank Wickham, Assistant Registrar of Records, Borough of Queens.

Buffalo, 360,000. Ernest Wende, M. D., Health Commissioner, reports for January: Deaths, 313—94 under five years; death rate, 10.43; from zymotic diseases per 1,000 from all causes, 115; diphtheria, 19; typhoid fever, 4; acute respiratory diseases, 49; consumption, 30.

Rochester, 175,000. George W. Goler, M. D., Health Officer. Report for January: Deaths, 174—23 under five years; death rate, 12.0; from zymotic diseases per 1,000 from all causes, 62.50; diphtheria, 5; acute respiratory diseases, 21; consumption, 26.

Albany, 100,000. Report for January: Deaths, 174—45 under five years; death rate, 20.85; from zymotic diseases per 1,000 from all causes, 15.0; typhoid fever, 12; diphtheria, 7; acute lung diseases, 30; consumption, 20.

Syracuse, 120,000. Report for January: Deaths, 147—24 under five years; death rate, 14.7; from zymotic diseases per 1,000 deaths from all causes, 88.

NORTH CAROLINA.—George G. Thomas, M. D., President, Wilmington; Richard H. Lewis, M. D., Secretary, Raleigh.

The February Bulletin summarizes the mortality for January, from twenty-three towns, with an aggregate population of 126,660—55,021 colored: Aggregate deaths respectively, 69.93; 162; representing annual death rates, 11.6, 20.3, 15.3. The causes of death were, in the order of the greater prevalence: Consumption, 20; pneumonia, 16; heart disease, 12; neurotic diseases, 9; brain diseases, 7; typhoid fever and diarrhœal diseases, each, 5; whooping cough and measles, each, 1. From accidents, 4.

OHIO.—S. P. Wise, M. D., President, Millersburg; C. O. Probst, M. D., Secretary, Columbus.

State Board Bulletin for February reports cases of infectious diseases for four weeks ending January 29, from 63 places, aggregating a population of 1,288,686: Diphtheria and croup, 203—42 deaths; scarlet fever, 171—8 deaths; typhoid fever, 118—16 deaths; whooping cough, 149—10 deaths; measles, 1,486—2 deaths.

Cincinnati, 405,000. J. M. Winthrow, M. D., Health Officer, reports for January: 520 deaths—142 under five years of age. Annual death rate, 15.40. From consumption, 61; pneumonia, 84; bronchitis, 31; diphtheria, 13; typhoid fever, 8; whooping cough, 9.

Cleveland, 350,000. J. L. Hess, M. D., Health Officer, reports for the month of January: Deaths, 326—105 under five years. From diphtheria, 10; typhoid fever, 6; phthisis, 12; tuberculosis, 32; pneumonia, 42; bronchitis, 5. Death rate, 10.57.

PENNSYLVANIA.—Pemberton Dudley, M. D., President, Philadelphia; Benjamin Lee, M. D., Secretary, Philadelphia.

Philadelphia, 1,240,266. Benjamin Lee, M. D., Health Officer, reports for the four weeks ending February 26: Deaths, 1,916—573 under five years of age. From diphtheria, 98; typhoid fever, 75; consumption, 25; pneumonia, 286. Annual death rate per 1,000, 14.4.

York ("Daily York"), March 1.—Up to last evening Health Officer Jessop had official notification of thirty cases of typhoid fever, and this number, we are reliably informed, would be augmented by one-half at least if all were reported. The disease is not confined to any particular locality, but is general all over the city. It is attributed to foul water.

Pittsburg, 285,000. Report for the four weeks ending February 26: Deaths, 452—148 under five years of age; typhoid fever, 19; consumption, 31; diphtheria, 9; whooping cough, 11. Death rate, 20.1.

SOUTH CAROLINA.—Charleston, 65,165—white, 28,870; colored, 36,295. H. B. Horlbeck, M. D., Health Officer, reports for four weeks ending February 26: Deaths, 109—80 colored. Under five years of age, 33. Annual death rate—white, 12.87; colored, 28.54—21.73.

TENNESSEE.—W. J. McMurray, M. D., President, Nashville; J. A. Albright, M. D., Secretary, Somerville.

Memphis, 61,747—30,317 colored. Heber Jones, M. D., President; M. Haase, M. D., Secretary. Report for January: Deaths, 123, of which 62 were colored, and 20 under five years of age. Annual death rate—white, 23.28; colored, 24.54; total, 23.91. Deaths from fevers—typhoid, typho-malarial and malarial—4; consumption, 16; pneumonia, 26.

Annual report by the retiring president, G. B. Thornton, M. D.: Estimated population, 61,747—white, 31,417; colored, 30,330. The total number of deaths for the year was 1,324—white, 620; colored, 704. White death rate, 19.73; colored, 23.21; combined, or for total population, 21.47. With the elimination of non-residents of both races this is considerably reduced. The total number of deaths for 1897 is less than for 1896 by twenty-four, and

less than for 1895 by 148. This reduction of deaths on an increased population speaks well for the general good health conditions of the city.

During the year there were reported of small-pox 30 cases—five were varioloid of white children all in one family, treated at home and recovered. The other twenty-five cases were all negroes, mostly strangers found in different parts of the city, and as soon as discovered moved to the county hospital for this disease. Of diphtheria there were 27 cases, with six deaths; scarlet fever, 35, one death. He is of the opinion that "every vestige of the fever which visited other sections of the Southern country and of which there were a few cases in Memphis, has been eradicated from the city, and for the disease to reappear here again it will have to be reintroduced. But it is not likely that Memphis will be tried by such unusual conditions again.

"In November and December a careful house to house inspection was made. Every house that had had a case of yellow fever in it was thoroughly disinfected with formaldehyde; also houses or rooms and their furnishings where there was any suspicious sickness. Instructions were also given to occupants of these houses to open these rooms in cold weather. The whole of the unsewered district in the southern part of the city is now sewered, and it is contemplated to have every residence and business house there connected with the system by June, 1898."

UTAH.—Salt Lake City, 48,076. Wm. T. Dalby, M. D., Commissioner. Report for January: Deaths, 56—16 under five years of age. Annual death rate per 1,000, 9.60. From zymotic diseases, 7; consumption, 14.

March 6 ("Tribune").—An epidemic of diphtheria in Farmington has caused the closing of the schools and Sunday schools.

Morgan, Feb. 16.—An epidemic of diphtheria of the most malignant type has broken out here. One child has died and others were attacked before the nature of the malady became known. The Mormon conference, which was in session, was hastily adjourned and the schools closed.

WASHINGTON--Seattle, 70,000.—Clarence A. Smith, M. D., Health Officer and Secretary, reports for February: Deaths, 55. Annual death rate per 1,000, 9.42. Deaths from consumption, 8; pneumonia, 3; diphtheria, 5. Infectious diseases reported: Diphtheria, 14; scarlatina, 15; measles, 17; typhoid fever, 6; whooping cough, 3.

WISCONSIN.—Solon Marks, M. D., President, Milwaukee; U. O. B. Wingate, M. D., Secretary, Milwaukee.

Milwaukee, 275,000. Walter Kempster, M. D., Commissioner of Health, reports for February: Deaths, 220—79 under five years of age. Annual death rate per 1,000, 9.60. Deaths from diphtheria, 7; typhoid fever, 1; consumption, 18; pneumonia, 26; bronchitis, 21; other respiratory diseases, 4. Cases of infectious diseases reported: Diphtheria, 25; scarlatina, 9; typhoid fever, 4; measles, 1.

The low death rate for the month is unprecedented in the history of Milwaukee since the organization of a Department of Health, while the actual number of deaths is smaller than for any February since 1887. The average number of deaths for the month of February for the years 1888 to 1897, inclusive, is 317, the highest being 408 in 1892, the lowest, 255 in 1880.

CONTRIBUTIONS TO THE POPULATION BY THE AGED.—The "Medical Age" is responsible for the statement that a Toronto woman over sixty years of age gave birth recently to a baby girl. Her husband rejoices in the goodly age of seventy-eight. The mother, however, has had much experience at this sort of thing, for this child is her twenty-second. One would think that she was old enough to know better. The male sex, as might naturally be supposed, have better records than this. A Tyrolese gentleman with an Italian name, Panaricini, is reported to have married at the age of eighty-two, and to have increased the population of his district by seven healthy infants. It is not stated, however, just what was the age of his assistant in this performance, and so the clinical history must remain an incomplete one.

BOOK REVIEWS.

LES MALADIES EVITABLES. Phophylaxie, hygiène publique et privée, par le docteur Georges J.-B. Baillière. 1898. 1 vol. in-18, 250 pages ("Bibliothèque scientifique contemporaine"), 3 fr. 50.

Preventible Diseases. Public and Private Hygiene, by Dr. Geo. J. B. Baillière. 1898. Pp. 250. Price, 3.50 fr. Paris: J. B. Baillière et Fils.

Microbic diseases, the causes of which are so well known to-day

from the labors of Pasteur and his pupils, are all regarded as preventible diseases.

The work elucidates the part taken by the micro-organism, which constitutes the groundwork, and also the part enacted by the different elements that provide for the germ, in the propagation of contagious diseases. The soil (terrain) and the germ are the two essential factors in the production of disease.

Having given proof of the role of the organism, the author proceeds to point out the prophylactic measures necessary to maintain the organism in a healthy condition, so as to prevent the attacks of infectious germs.

He then considers the evidence of the transmission of disease through the air, water, soil, food, etc., and he points out the best means to be employed to prevent the transmission of germs by these means.

It is a concise and useful manual, showing that hygiene properly applied enables the individual to avoid microbic diseases, and that man will have the degree of health he prepares for himself; for "L'homme ne meurt pas, il se tue." (Man does not die, he kills himself.)

SANITARY ENGINEERING. By Wm. Paul Gerhard, C. E. Consulting engineer for sanitary works; Member of American Public Health Association; American Forestry Association; Corresponding member of American Institution of Architects, etc. 12mo., pp. 132. New York: Published by the author, 36 Union Square East.

This is an admirable companion manual to the preceding. The subject discussed comprehends water supply, prevention of pollution, sewage disposal, street pavements, street cleaning, removal of ice and snow, street sprinkling, cleansing footways and sidewalks, removal of refuse, garbage disposal, scavenging, the laying out of cities and towns, sanitary engineering in relation to habitations, in short: subjects with which every sanitary officer should have practical knowledge. They are here summed up concisely and lucidly by a thoroughly accomplished sanitary engineer who has had extensive practical experience. No health officer or sanitary inspector can afford to do without such knowledge, and no book that we are acquainted with presents it more clearly.

THE SANITARY CONDITION OF THE BROOKLYN WATER SUPPLY. —Report of the Rockville Centre Laboratory of the Department of Health of the City of Brooklyn to Z. Taylor Emery, M. D., Commissioner of Health. By Hibbert Hill, M. B., Biologist and Director, and Joseph W. Ellius, Chemist. E. H. Wilson, M. D., Consulting Bacteriologist. Pp. 177, and many unpaged tables in addition. Department of Health, Brooklyn, N. Y.

A very interesting report on conditions which should and ought to have been prevented by a recognition of the need of practical measures for the detection of impurities in the water supply as the most important provision of an efficient public health service at all times, instead of, as in this case, awaiting the explosion of impurities—known to have been constantly accumulating—dangerous to the public health, before taking action; though there appears to have been a chemical laboratory and analytical chemist attached to the Health Department all the time.

This laboratory was established in October, 1896, after the abominably bad odor of the order of the water had become disgusting to the community and the drainage of stable and other filth into the reservoirs had been exposed. The laboratory was located near the centre of the drainage area, so that samples of the water collected were delivered at the laboratory within three or four hours from the time they were taken. Examinations were made contemporaneously, while physical inspections of the subsidiary drainage area were also carried on. The rainfall records were also studied in order to determine its effect upon the color and composition of the water, and with special reference to albuminoid ammonia and bacteria. The magnitude of the work is suggested by the statement that it comprehends 17 ponds and reservoirs, and about a dozen driven well stations. The practical outcome of the investigation was the verification of that which the SANITARIAN had published and what had been published in the newspapers about the foul drainage in the water supply, and recommendations that certain of the ponds and wells be wholly abandoned on account of the pollution; that vigorous measures be taken to prevent the further pollution of others; that the tracing of or searching for typhoid fever germs be continued; that the purification of the drainage area be continued; and that further studies of the quality of the water supply be made with a view of erecting purification plants where needed or receiving an additional supply so that dangerous sources may be cut off.

The authors of the report assert their belief that this investigation is one of the most notable examples of simultaneous and bacterial studies of a water supply, extending over a long period, hitherto made. While they recognize the limitations of bacterial examinations of natural waters, they believe that, taken in conjunction with chemical and meteorological conditions and a physical inspection of the drainage area, bacterial exterminations may be of great value. It affords us pleasure to commend the report to all who are interested in or whose obligations require a *constant* study and inspection of the water supply as the most important duty of sanitary authorities. Since the issue of this report (dated Dec. 1, 1897), under the new regime of the consolidation act, the laboratory has been closed, and all of its contemplated work concentrated in the Laboratory of the Health Department of the city of New York.

How to Become a Trained Nurse.—A Manual of Information in Detail, with a complete list of the various Training Schools for Nurses in the United States and Canada. Edited by Jane Hodson, Directress of Nurses, State Hospital, Fountain Springs, Pa.; ex-matron of the House of Relief, Hudson Street, New York; graduate of the New York Hospital Training School. 12mo., pp. 250. New York: William Abbott, 31 Nassau Street.

The scope of this book is well indicated by its title. It comprehends statistics of the different institutions and schools, furnished by their officers, thus presenting a directness and accuracy of statement not otherwise attainable, with reference to the kind of nursing desired, the number of patients cared for, the hours on duty, the opportunities of study, how to apply for admission, and the accommodations—whether the applicant may expect to have a room to herself or share it with other nurses, as is sometimes required in the best hospitals. With the detail of knowledge on all of these points, there are numerous illustrations of hospitals, hospital wards and their arrangements, uniforms and equipments. Altogether: to young women who contemplate taking up nursing as a profession, we commend this book as being the most replete with practical knowledge essential to the subject of any that has fallen under our observation.

The Western Medical and Surgical Gazette is a new and welcome addition to our exchange list. It is a seventy-six page

make-up, two columns to the page, and a substantial cover. It began in November, and every number thus far is well filled with matter of practical utility. $2.00 a year; 25 cents a copy. Wm. N. Beggs, A. B., M. D., and Lincoln Mussey, M. D., Editors; Wm. H. Sharpley, Business Manager: Denver, Colo.

MEDICAL AND SURGICAL REPORTER, an old favorite, begins its *seventy-eighth volume*, March 12, as a semi-monthly and enlarged proportions, under new auspices: Harold Havelock Kynett, A. M., M. D., Editor; G. C. Clifton Howard, Assistant Editor; A. L. Benedict, A. M., M. D., Buffalo, N. Y.—C. K. Stokes, Business Manager. $3.00 a year, in advance; 10 cents a copy: "Medical and Surgical Reporter" Co., P. O. Box 843, Philadelphia, Pa.

THE ENGINEER. "Vol. XXXV. No. 450," March 1, 1898. $2.00 a year. Published semi-monthly by the "Engineer" Publishing Co., 43 Cedar St., New York.

A large folio of sixteen pages, three columns to the page, so well and so excellently filled as to fully verify its record of maturity, though it has just now, for the first time, appeared on our exchange table. The "Maine" is the chief subject of comment in this number, as she is of all the engineering magazines of corresponding date, illustrated by photogravures, as a "thing of beauty" before the disaster that befell her, and with several of her distorted appearance from different view points since. Besides other articles in this number are: Purification of Domestic Water Supply, and Destruction of Refuse: of special interest to sanitarians.

CONTEMPORARY LITERATURE.

MENNONITES.

Mennonites prosper everywhere. They were prosperous in Russia, and they are prosperous in Canada. If they are compelled to emigrate, they send first their delegates, who select the best spots —so they did in Manitoba; and they emigrate in whole villages. They settled in Canada on the distinct understanding that they should receive the land in a block and be left entirely to them-

selves; otherwise they would have gone to the States, to South America or even to Greenland to join the Moravian Brothers. They settled in villages, and in these villages they maintain the institutions of mutual support and peace, which they consider the essence of Christian religion—a practice for which they have been persecuted for three centuries in succession by Christian churches and states.

Their villages consist of broad streets, bordered by houses, each of which is surrounded by young trees. Behind each house is a plot of manured land given to a sunflower plantation (it is usually given to hemp in Central Russia). Then the village has a large common, well fenced, to keep the cattle; and beyond the fence lie the fields, divided into strips allotted to each family in proportion to its working capacities. Their houses are spacious and have an air of homeliness which is often missing in other hamlets; there are more trees in their villages than in all the surrounding prairie, and these plantations protect the houses and the yards from the snow drifts; and there are no signs of poverty, although the Mennonite population has multiplied in twenty years out of every reasonable proportion.

All teachings of modern civilization being a glorification of unbridled egotism, the elders cling only the more to the Bible as the sole foundation of all education on account of the descriptions of communist life which they find in it. They look with suspicion upon all scientific education. Still it is a remarkable fact that amidst that capitalist civilization some twenty thousand men should continue to live and to thrive under a system of partial communism and passive resistance to the State which they have maintained for more than three hundred years against all persecutions.—Prince Krapotkin on "Some of the Resources of Canada," in the "Nineteenth Century" for March.

ANCESTORS AND ANCESTRY.

Now it must be admitted on common-sense principles that the formation of hereditary societies has reached a natural limit, and it is time to cry a halt. The reasonable conclusion is that these societies should unite in work, if not in organization, and justify their existence by practical deeds. The end, however, is apparently not yet; the ancestor quest drives its followers to absurd lengths. Forefathers conjured up rise from the genealogical caldron in a sort of harlequin procession—the ancestor in buff and

blue, the ancestor in scarlet tunic, the bewigged ancestor, the jack-booted ancestor, until from the dim twilight of heraldic tradition the crowned ancestor looms up in the shadow. Is there not something decidedly incongruous in the spectacle of descendants of those who bade defiance to the third George of the name seeking to establish kinship with royalty through Saxon chief or Norman freebooter? Does not this latest departure tend to prove that ancestor-hunting has no limit, that it is simply a question of enterprise, research, and credulity? If we may establish the Order of the Crown, why may we not in due course welcome a new hereditary society, lineal descendants of the Mariners of the Ark, the Ararat Chapter, with proper insignia—suspended from a navy-blue ribbon, a dove bearing the olive branch?—"Harper's Bazar."

HOW VIRGINIA DEALS WITH THE LYNCHING EVIL.

The recent administration of Governor O'Ferrall, of Virginia, may be cited as an illustration in point. During the fourteen years immediately preceding Mr. O'Ferrall's inauguration there were 62 lynchings within the bounds of the State; during the last four years there have been but 3, and in neither case was the chief executive in a position either to prevent the crime or punish the offenders. The keynote was struck at the beginning of the administration. The solemn declaration of a Confederate veteran whose bravery is a proverb among his people that mob violence in Virginia must cease, at once awoke a large part of the lawless element to its senses, and the law-abiding element, led by the better part of the press of the State, rallied at once to the man who had given such unmistakable utterance to their sentiment. The victory was not won without a blow. There were times when the air smelled of war. There were times when the soldier-boys went scurrying across the country as if a rebellion had broken out somewhere. There were times when these brave boys reached the county jail just ahead of the mob, and a shudder passed over the commonwealth when it was found that the prisoners whose lives had been barely saved were innocent of the crimes of which they were charged. And there was a time when a captain who wired the Governor that it would be impossible to get his company together in time to go to the rescue of a prisoner threatened with mob violence, got an answer back with a startling military ring: "Nothing should be impossible to a soldier; you must go." There

is nothing of which Virginia is prouder to-day—and surely Virginia knows how to be proud—than her record on this question for the past four years.—From "The Prevention of Lynch-Law Epidemics," by Edward Leigh Pell, in "American Monthly Review of Reviews" for March.

AIR OF MAMMOTH CAVE.

In the March "Century" there is an article on "The Mammoth Cave of Kentucky," by John R. Proctor, formerly State Geologist of Kentucky, with illustrations by André Castaigne. Mr. Proctor, in describing the tour of the cave, says:

Some distance on we come upon two stone cottages built against one of the walls of the avenue. These are the remains of a number that were built in the cave in 1843 for the abode of consumptive patients. It was believed that the pure air of the cave would effect a cure, and fifteen consumptives took up their abode here, and remained for five months without going outside. It is said that when they did go out three died before they could reach the hotel. Something more than purity is required—sunlight. It is said that the saltpetre-miners had remarkable health while working in the cave, and persons with weak lungs are certainly benefited by short walks in this atmosphere.

We know the air is dry, because the timber carried in in 1812 has not decayed, and iron hinges have been here since 1843, and show no sign of rust. We know the air is pure, because here animal matter does not decay, but simply dries up. The mummies found in the caves were not prepared mummies, but simply desiccated bodies. The uniform temperature of from 53° to 54° the year round has been demonstrated. Consumptives take long sea voyages and visit high altitudes to get the benefit of aceptic atmosphere; but they suffer from variations of temperature, from storms, and at high altitudes exercise cannot be taken, while the cave air predisposes one to take exercise with little fatigue. I have known delicate women to walk for nine hours in the cave, clambering up steep ascents and over rocks, and come out of the cave feeling no sense of fatigue until they reached the warm, impure air outside, charged with the odors of decayed vegetation, when they would almost faint, and would require assistance in ascending the path to the hotel.

Consumptives in high altitudes are compelled to remain indoors in winter weather and breathe the vitiated air of closed rooms;

while in sanitariums supplied with cave air, by letting the air in at the upper part of the rooms and out at the lower part, all exhalations would pass out, and pure air would be constantly rushing in at a uniform temperature, winter and summer. Then, it would be a boon if we could escape the oppressive heat of summer into hotels kept cool and pure by the air from these great dry caves.

A DROUTH-RESISTING PLANT.

The chief reason why alfalfa hay will grow in the short-grass country is that it has long roots. They have been known to strike twenty-five feet deep for moisture. The plant will not thrive, therefore, in soil that is not open and deep. An ideal place for its growth is along the river bottoms in the western part of Kansas—land under which great lakes of "sheet water," miles upon miles in extent, are found from ten to twenty-five feet below the surface. The roots of alfalfa readily push down to the water and drink when they need moisture, and the result is that the plant blossoms and prospers, and becomes a never-failing source of revenue to the man who cultivates it. On the rolling uplands, where there is scarcely an average rainfall of twenty-five inches a year, the plant will live and produce hay nearly always. It makes good pasturage under ordinary conditions there, and is almost certain every year to produce a fine crop of seed. All the uplands are fertile enough, the only trouble about making use of that fertility being the lack of moisture. Irrigation has not yet succeeded in bringing water in abundance to the assistance of the tiller of the soil in this region, and therefore only such a plant can live as has deep roots, and a pertinacity that even the hot winds of Kansas cannot shake.

There is another remarkable characteristic of this plant that none of its rivals possesses—that is, the power to enrich chemically exhausted land. Along its tangled roots close examination shows masses of what are known to be tubercles. In othe words, every root of alfalfa is afflicted with tuberculosis. Inhabiting these tubercles are myriads of bacteria. It is a general belief that bacteria are harmful to the human race. Some kinds are; but science is authority for the statement that bacteria are not always dangerous. Professor G. L. Clothier, of the State Agricultural College in Kansas, says, in discussing the bacteria on alfalfa and similar plants: "Many species are very beneficial to the world.

Among them are the bacteria inhabiting the tubercles on the roots of leguminous plants."—Franklin Matthews, in "Harper's Weekly."

ANNOUNCEMENTS.

"AN INTERNATIONAL HEALTH EXPOSITION" will be held at the Grand Central Palace, New York City, for five weeks, beginning April 25th instant. Mr. Charles F. Wingate, Sanitary Engineer, Supervising Director; Mr. B. E. Greene, Secretary; Mr. Montgomery Maze, Treasurer. The list of the Advisory Board comprises about one hundred specialists in the various lines of sanitary work, and Mr. Wingate promises for it an extraordinary display of everything of consequence hitherto developed in the promotion of sanitation.

Exhibits have already been secured from nearly all the hospitals in New York and Brooklyn, and the co-operation of all the nurses in the country is desired. During the first week of the exposition there will be a convention of the National Association of Trained Nurses at the Grand Central Palace.

An attractive corner on the second floor will be occupied by the Domestic Department of the W. C. T. U., in charge of Miss Marion A. McBride, of Boston. Here will be noon-day talks on everything connected with the work of this branch of the W. C. T. U., such as Nutrition, Cooking Without Alcohol in the Home and Hospital, etc., and afternoon receptions and five o'clock teas daily.

Offices of the exposition are now open at the Grand Central Palace.

AMERICAN MEDICAL ASSOCIATION.

Denver Meeting, June 7-10, 1898.

Preliminary Announcement of the Committee of Arrangements.
306 McPhee Building.

Denver, Colo., February 23, 1898.

The Committee of Arrangements announces that preparations for the coming meeting are well advanced. A large number of prominent men have signified their intention to be present and

read papers, and an excellent scientific programme is assured. The indications all point to a large and successful meeting.

Convenient and ample accommodations have been secured for the general sessions, section work, registration and exhibits.

The entertainment of members and their families is being planned on an elaborate scale, and the committee promises all who may come a most enjoyable time.

Denver is an interesting city, and the State offers many and varied attractions to visitors.

Local excursions are being arranged to take place after the meeting that all may have ample opportunity of visiting various points of interest in the State and seeing the best scenery of the Rocky Mountains.

The committee confidently expects to obtain a one-half rate and 30-day limit for the round trip on roads west of Chicago and St. Louis, and reduced rates on Eastern roads. The rates will be announced in the journal of the Association as soon as definitely determined.

THE AMERICAN MEDICAL PUBLISHERS' ASSOCIATION will hold its fifth annual meeting in Denver, on Monday, June 6, 1898 (the day preceding the meeting of the American Medical Association). Editors and publishers, and all persons interested in medical journalism, are cordially invited to attend and participate in the deliberations. Contributors should send titles of their papers at once to the secretary, Chas. Wood Fassett, St. Joseph, Mo.

THE CHICAGO MEDICAL MISSIONARY TRAINING SCHOOL is an undenominational school of practical philanthropy recently established by several philanthropists in the large building at 1926 Wabash Avenue, Chicago (until recently occupied by the Home of the Friendless). Its purpose is to prepare Christian young men and women to labor in city missionary and rescue work, under the various missionary boards.

The instructors are physicians, trained medical nurses and philanthropic workers, all of whom give their services free.

There is in the building a free medical dispensary, free bath, and laundry for women and children, day nursery, free kindergarten and kitchengarten, and also a home-finding department for friendless men, women and children.

For particulars, call or address, Superintendent, 1926 Wabash Avenue, Chicago, Ill.

THE SANITARIAN.

MAY, 1898.

NUMBER 342.

WASHINGTON'S POLLUTED WATER SUPPLY.*

By S. C. BUSEY, M. D., President.

As early as 1890, in a "contribution to the etiology of typhoid fever," Dr. George M. Kober cited the notable fact that following the epidemic at Cumberland, Md., the first case of which occurred December 10, 1889, the number of deaths from the disease in this city from December, 1889, to April 30, 1890, was seventy-four, nearly double the number during the corresponding months of the previous year. "This may," adds Dr. Kober, "have been a coincidence, but it may also confirm the conclusions of the English river pollution commission, that nothing short of abandonment of the inexpressibly nasty habit of mixing human excrement with our drinking water can confer upon us immunity from the popagation of epidemics through the medium of potable water."

But to Dr. G. Lloyd Magruder must be awarded the merit of initiating an investigation which placed this society in the front in efforts to secure a better water supply for this city. In a lecture delivered before the Sanitary League February 5, 1894, Surgeon Charles Smart, U. S. A., emphasized the great prevalence and high death rate of typhoid fever in this city, and attributed it to pollution of the Potomac water supply. These statements Dr. Magruder, who was in the audience, promptly challenged. In a subsequent publication in "The Evening Star" Dr. John S. Billings and Prof. Clifford Richardson, the District chemist, disputed the accuracy of Dr. Smart's statement referring to the pollution of the Potomac

*A paper read at the recent meeting of the Medical Society of the District of Columbia.

water supply. While subsequent investigations have not verified Dr. Smart's statement that the high percentage of typhoid fever in this city was due solely to the distribution of the germs of the disease through Potomac water, they point to the conclusion that it is one of the sources of infection, and that one which offers the greatest danger.

Dr. Magruder did not drop the subject at this point, but at the meeting of this society, February 7 following, called attention to the statements that had been made, and, upon his motion, a committee, composed of himself, Drs. W. W. Johnston and C. M. Hammett, was appointed to investigate the causes of the prevalence and high death rate of typhoid fever in the District of Columbia.

This committee based its investigation upon the following inquiries:

"1. The prevalence and mortality of typhoid fever in the District.

"2. The relation of the dissemination of the disease to the—(a) public water supply; (b) to the pollution of the soil with leakage from privies, from defective sewers and from backing up of sewage from tidal movements; (c) to the drinking of well or pump water; (d) to contaminated milk, and to other causes.

"3. The difference in mortality in different areas of the city, with a view to discover the causes of the disease.

"4. Conclusions based upon the foregoing data as to what measures should be taken to diminish the spread of the disease."

The committee prosecuted their investigations with remarkable energy and diligence. On June 6, 1894, their report, accompanied with numerous maps, charts and diagrams illustrating its context, was submitted to the society, with the following recommendations, which, after consideration, were unanimously adopted:

"1. The immediate abandonment of all wells within the city limits, exception only to be made in case of the absence of the Potomac supply and where the wells, after repeated chemical and bacteriological examinations, have been found to be free from all possible sources of danger. But even these to be abandoned as rapidly as possible.

"2. Purification of the sewerage system already existing by replacing as rapidly as possible all damaged or defective drains.

"3. The introduction of new sewers in advance of other improvements in parts of the city not now supplied with drainage and the extension of the system as far outside of the city limits as

the rapidly growing population demands, so as to prevent soil contamination.

"4. The adoption of some system by which the lower sections of the city can be more completely drained and the risks arising from the backing up of tide water and sewage prevented.

"5. The final and safe disposal of the sewage.

"6. To make all existing privies, vaults or other receptacles of human excreta water tight, and by rigid inspection and penalties to prevent the danger from leakage and overflow.

"7. The early completion of the plans recommended by Col. Elliot, in charge of the Washington aqueduct, and now in course of execution, which have in view the sedimentation of the Potomac water and ultimately the completion of works for filtration, the only proper method of purification.

"8. The suppression of all privies and the enforcing of the law to make sewer connections.

"9. Careful inspection of all dairies in the District from which our milk supply is drawn, and the enactment of a law by which no milk shall be sold in the District without a permit from the health office. The inspection should cover an examination at the dairies of all possible sources of infection, including the water supply.

"10. The urging upon the members of the profession of a careful collation of all facts bearing upon the mode of infection in each case and the advantage of reporting such facts to the society and the propagation of the doctrine that immediate disinfection of the stools is the first duty of the physician as guardian of the health of the community.

"G. L. MAGRUDER,
"W. W. JOHNSTON,
"C. M. HAMMETT,
"Committee."

These recommendations comprehend the wide scope of the inquiries and show conclusively the thoroughness and completeness of the committee's investigations. Subsequent investigations have reaffirmed their conclusions and so extended the field of research along the line indicated by Surgeon Charles Smart as to emphasize the necessity of sedimentation and filtration of the drinking water supply.

Immediately after the adoption of this report the society, through Commissioner Truesdell, received an invitation from the committee of the House of Representatives on the District of

Columbia, and on June 14, through its committee, composed of Dr. S. C. Busey, W. W. Johnston, G. L. Magruder, C. H. A. Kleinschmidt, G. Wythe Cook, S. S. Adams and D. W. Prentiss, presented the report to the committee of the House, which, after two hearings, reports of which were published in the local press, ordered it to be printed as a public document. Four thousand copies were printed and widely distributed throughout the country. It is believed that this is the first and only instance of a medical society appearing by invitation before a committee of Congress and of the publication by Congress of a report of its investigation into the sanitary condition of a city. The bill then pending, known as the bond bill, to provide means to complete the water supply and sewage disposal systems passed the House of Representatives, but failed in the Senate.

On October 24, 1894, Dr. John S. Billings, who had recently returned from a visit abroad, read, by request, before the society a paper entitled "Filtration Methods of Water Supply and Sewage Disposal in Some Large European Cities," in which the distinct statement is made that "the securing of an abundant and pure water supply appears to be the most urgent need of Washington at the present time," and adds, "Sedimentation alone will not give us satisfactory results and rapid filtration through steel cylinders, with or without the addition of alumn or other chemicals, while quite as costly as the simple sand filtration, does not give an equal guarantee of the purity of the water." This paper was published in full in the "Evening Star" of October 25, and attracted widespread attention, because it set forth from actual observation and study the superiority of sand filtration over other methods.

In December, 1894 (10th), the president of this society was appointed chairman of the Committee on Public Health of the Washington Board of Trade, and continued at the head of that committee until the appointment of Gen. George M. Sternberg, in December, 1897. At a public meeting of the Board of Trade held January 22, 1895, specially set apart for that purpose, the chairman of the Committee on Public Health, in an address, set forth the results of the investigation of the committee of the medical society and urged the importance of active and co-operative effort of the Board of Trade to secure such legislation as would protect the community from the prevalence and high death rate of typhoid fever. Several other public meetings, one in the banquet hall of the Shoreham, one in the parlor of the Washington Club and

another at the Builders' Exchange, were held during the month of February, 1895, under the auspices of the Board of Trade, which were addressed by the chairman and Dr. W. W. Johnston in the hope that such impetus might be given to public sentiment as might secure the necessary legislation. In the report of the committee on public health of the Board of Trade, bearing date November 11, 1895, attention is called to the investigations made by this society in 1894. In this report the committee emphasize the importance of the extension of the system of sewerage and completion and purification of the water supply, including the abolition of pumps and wells and establishment of a proper system of sedimentation and filtration. In the reports of 1896 and '97 the committee renews these recommendations to the Board of Trade, which have been three times unanimously approved by said board.

By invitation, Prof. W. P. Mason, of Troy, N. Y., delivered January 30, 1895, an address before this society on the subject of water supply of cities, in which he set forth the necessity of sedimentation and filtration, and demonstrated the superiority of sand filtration over all other known methods.

Prof. Mason has made a special study of the water supply of cities and is the author of a text book on the subject, which is generally accepted as the highest authority in this country on that subject.

In 1895 the Commissioners of the District of Columbia appointed Dr. George M. Kober special medical sanitary inspector, who submitted, November 27, 1895, the result of his "investigation of 500 cases of typhoid fever, selected at random from those occurring in the District between July 1, 1895, and October 31, 1895, inclusive," which concludes with the following recommendations:

"First. The immediate closing of every well in the District whenever a better water supply can be obtained.

"Second. The early completion and extension of all necessary sewers within the city limits and the enforcement of the law to make sewer connections.

"Third. The abandonment of all box privies within the city limits and the enactment of more stringent laws for the prevention of soil pollution, together with a rigid, frequent and systematic inspection of all box privies in the suburbs.

"Fourth. The improvement of the Potomac water by means of filtering basins and the extension of the water supply to the suburbs at the earliest moment practicable.

"Fifth. Such measures as may be necessary to improve the sanitary condition in the lower part of the city, along the Potomac and the Eastern branch, looking to the reclamation of stagnant and polluted marshes and the prompt disposal of the sewage.

"Sixth. The enactment of a law requiring notification to the health officer of all cases of typhoid fever and other infectious diseases in the District of Columbia, together with a rigid enforcement of the building regulations requiring the cementing of cellars and basements, to prevent contamination of the air from polluted subsoils, and the systematic inspection of dairies inaugurated by you.

"In the meantime, as a preventive measure, I earnestly recommend to the public the thorough disinfection of the excreta from all typhoid fever patients and greater care on the part of those connected with the sick, together with boiling the water and milk supply.

"A most conservative estimate demonstrates that the number of cases of typhoid fever for the four months ending October 31 was scarcely less than 795. These cases represented 30,800 days lost in sickness, at an average cost of $1 per day. Assuming an annual average of 1,500 cases, the loss amounts to $90,000 per annum, thus indicating that it will be in the highest degree wisdom as well as economy to apply a prompt, speedy and effective remedy.

"It affords me great pleasure to testify to the fact that my investigation tends to confirm the conclusions reached by the special committee appointed by the Medical Society of the District of Columbia and so ably presented in their report submitted June 6, 1894."

In October, 1895, in compliance with the request of United States Attorney Birney, Drs. Busey, Kober and Woodward appeared before the grand jury of the District of Columbia to testify in regard to the causes and prevalence of typhoid fever in this District. In its report to Judge Cole, in Criminal Court No. 1, submitted December 18, 1895 ("Evening Star," December 18, 1895), the grand jury makes the following recommendations:

"That a system of sedimentation and filtration in connection with the water supply is primarily necessary.

"That the water supply is entirely inadequate and should be increased.

"That as opportunity offers all pumps and wells used for drinking purposes should be closed.

"That the use of box privies be discontinued by law.

"That all improved premises abutting on public sewers and water mains should be connected with such sewers and water mains, and their occupancy, unless so connected, be prohibited by law.

"That legislation relative to a more thorough inspection of milk is absolutely essential, and we earnestly hope and recommend there may be such immediate legislation as will improve the sanitary conditions along the Potomac and Eastern branch, looking to the reclamation of the marshes in that section and the disposal of the polluted matter forced upon them under the present sewerage system.

"At the moment the river should be dredged from the mouth of every large sewer to the river channel.

"We further recommend that a law be executed compelling all physicians to report to the health department every case of zymotic disease coming to their knowledge.

"We make this report in the hope that it will stimulate the action on the part of the authorities charged with such vital question as the public health, as well as to remind the general government of its responsibility in the premises."

In the report of the committee on public health of this society submitted January 26, 1896 (see Public Health Report, March 6, 1896), the conclusions and recommendations of the committee of 1894 are reaffirmed. The committee asserts that "the agitation of the subject of the purification of the Potomac water is forced upon us, as physicians, by every recent addition to our knowledge of the subject," and adds that sand filtration is the "most convenient and effective method for the purification of drinking water," and "must be adopted ultimately for the water supply of Washington."

At the same meeting the president submitted the following propositions, which were unanimously adopted:

"Whereas, The city of Washington, being the capital of the United States, should be placed and kept in the best sanitary condition; and

"Whereas, Such condition can only be secured by having every habitation or habitable house connected with an ample supply of pure drinking water, and with a system of foul water and sewage disposal which will promptly remove such fluids beyond the city limits in such manner as to absolutely prevent soil pollution; therefore

"Be it resolved, First, that the general system of water supply from the Potomac river should be extended so as to be available for the supply of every habitable building now in the city or which may be erected within the city limits, and that this provision should be extended as far as possible to the immediate adjacent suburban districts.

"Second. That the general water supply should be purified by sedimentation and filtration (the first being necessary at certain times and the second at all times) before it is admitted to the mains.

"Third. That the system of sewerage which has been adopted should be extended pari passu with the system of general water supply until every habitable house can be readily connected with it.

"Fourth. With the completion and purification of the conduit system of water supply, all springs, pumps and wells should be closed by such means and methods as will prove so effective that no human being can obtain drinking water from either of these sources.

"Fifth. As rapidly as possibly, pari passu with the extension of the conduit system of water supply and system of sewerage, the owners of every habitable and inhabited house should be compelled to make satisfactory connections with such systems of water supply and sewerage, and all privy boxes, cesspools and other methods of disposal of human excreta be effectively abolished.

"Sixth. Without adequate supply of pure water for all domestic purposes and sewer connections of habitable and inhabited houses, pollution of soil, foods and drinks and the diseases due to such pollution cannot be prevented."

At a public meeting of the Board of Trade February 25, 1896, at which the report of its committee on public health was considered, the foregoing propositions, submitted by the chairman of its committee, were adopted, with the following additional recommendations:

"Whereas, The numerous and constantly increasing area of marsh along the eastern border of the city is a constant menace to the health of the residents of the eastern section of the city, and especially so to the inmates of the almshouse and hospital, St. Elizabeth's Asylum and army and naval forces, officials and employes at the marine barracks and navy yard; therefore,

"Be it resolved, That the reclamation of these marshes is imperatively demanded and should be accomplished without unnecessary delay."

During the same year, 1896, this society, through its committee on legislation, had a hearing before a subcommittee having charge of the appropriation bill for the District of Columbia, at which the necessity of speedy completion of the system of sewage disposal and extension and purification of the water supply were fully discussed.

On January 15, 1897, the Civic Center of the City of Washington adopted the following preambles and resolutions:

"Whereas, The statistics of the Health Officer of the District of Columbia indicate an almost uniform increase and excessive prevalence of typhoid fever during the past fifteen years; and

"Whereas, The experience of the civilized world points to a contaminated water supply as the most important factor in the causation of this disease; therefore, be it

"Resolved, That we, the Civic Center of the City of Washington, a body composed of members who are working for the public good, most earnestly pray the Senate and House of Representatives in Congress assembled, that you will create a commission * * * for the purpose of determining the present sources of contamination of the Potomac river and the measures necessary to remedy, remove and prevent such pollution, if found to exist."

At a recent discussion, November, 1897 (see "Evening Star," November 20, 1897), of the pollution and sources of contamination of the Potomac water supply, before the National Geographic Socity, by Dr. E. K. Sprague of the Marine Hospital Service and Prof. A. P. Davis, hydrographer of the United States geological service, the conclusion was set forth that properly constructed filter beds was the only practical means of purifying the public water supply.

More recently, at public meetings of the Board of Trade held January 20 and February 4, 1898, to consider the reports of committees on public health and water supply, the agitation of the subject was renewed and the opinion expressed that completion of the systems of water supply and purification and sewage disposal were imperatively demanded by every consideration of public sanitation.

In the letter of the acting secretary of war, in response (Senate document No. 94, second session, Fifty-fifth Congress) to resolu-

tions of the Senate of January 10, 1898, the reports from the surgeon-general of the army and of Capt. D. D. Gaillard, Corps of Engineers, "relative to the filtration of the water supply of the District of Columbia," Gen. Sternberg sums up the result of his investigation in the statement as follows:

"So far as I am able to judge at present, the most reliable and practicable method of attaining the object in view would be the construction of filter beds similar to those in use for purifying the water supply of London, Hamburg and other European cities, and at Lawrence, Mass., in this country."

And Capt. Gaillard in the third of his conclusions says:

"The drainage area of the river above the Great Falls is so large and lies in so many different States that it is believed it will be utterly impracticable either to pass or to enforce such laws as will entirely protect the Potomac from pollution, and when the citizens of the District demand a water supply free from suspicion it must be secured by filtration."

And, lastly, at the meeting of the medical society, February 23, 1898, this subject was reviewed from the beginning of the agitation to the present time, with the citation of such additional facts and information as seems to establish the imperative and immediate necessity of legislation to secure an adequate supply of unpolluted drinking water. The report of the committee on public health and the papers by Drs. Kober, Kinyoun, Smart, Johnston and Woodward are conclusive in favor of purification of the water supply by sedimentation and filtration.

The foregoing resume of the history of this agitation sets forth the active efforts of this society to complete the sanitation of this city. Every investigation has led to the same conclusions. The Board of Commissioners has added the force of official indorsement and approval to its recommendations and in various ways sought to secure necessary legislation; the Board of Trade has added the weight of popular judgment and indorsement, and recently the local press, more especially the "Evening Star," have contributed the influence of their editorial columns to the promotion of such legislation as would secure an adequate supply of unpolluted drinking water. All these efforts have proven futile, and the city remains to-day the prey of a single preventable disease, which has cost its citizens in loss of life and actual outlay, in the past ten years, more than would have been required to complete the systems of water extension and purification and sewage disposal.

GARBAGE DISPOSAL.

By THOMAS B. CARPENTER, M. D., Buffalo, N. Y.

The disposal of the waste material of large cities has become a very serious problem. Advanced sanitary ideas have rendered it necessary for the health and well-being of a city that its waste be removed in as clean a manner as possible. Before considering the disposal of garbage, however, I shall review briefly the varieties of waste material and, in particular, the amount of garbage.

All waste material may be divided into the following classes: garbage, ashes, street sweepings, dead animals, the refuse of slaughter-houses, night soil, and general rubbish that consists of boxes, paper, boots, shoes, rubbers, bottles, tin cans, and so forth.

It is manifestly impossible to dispose of all these various materials in the same manner, consequently it is customary to collect separately or sort after collection, and as far as possible to utilize those of value. The animal and vegetable refuse presents the greatest difficulty of disposal. The other materials, with the exception of night soil, are disposed of with comparative ease. The ashes are used for filling in low lands, slaughter-house refuse is used for the manufacture of fertilizers, and the paper and boxes are burned. The shoes can be used for the manufacture of artificial leather, the tin cans can be heated to recover the solder, the old bottles can be sold to dealers or to glass houses for remelting, the rubber is valuable for remanufacture, and the iron for sash weights.

Formerly the larger number of cities disposed of their garbage either by drying sufficiently and then burning as completely as possible in an open dump, by transporting out to sea where the position of a city allowed of such disposal, by dumping into rivers, or selling to farmers for feeding cattle or swine. In some instances the material was simply transported far into the country and dumped anywhere.

Among the earlier methods of disposal, it is interesting to note the quite complete utilization method used in Baltimore several years ago. In that city all the waste material was transported to a dump outside the city. In this dump were bins designed to hold the various materials. Besides these there were two rows of night

soil tanks, one above the other, each with a capacity of 2,300 gallons. Below these tanks were pits intended for the reception of the garbage. As night soil was received, it was pumped into the upper tanks, passing through screens to remove stones and other extraneous material, and allowed to settle. As settling progressed, the fluid was transferred to the compost pits below. When an upper tank became filled with semi-solid material it was run into the lower series and mixed with screened coal ashes in the proportion of one part of ash to two parts of night soil. The ash deodorized the material. It was then spread in heaps and a heating or fermentation took place, during the process of which the lumps and clods became thoroughly disintegrated. This poudrette made a very efficient fertilizer and was sold at from fifteen to twenty dollars a ton.

The garbage from the compost pits below was mixed with fluid from the night soil tanks and sufficient sifted ashes added to render the material dry and transportable. In this state it was sold as a fertilizer at seventy-five cents per load of thirty bushels. The bones, rags and rubbers were sold separately, and the old leather was burned to obtain a material used in the case-hardening of iron. The old coal was sold by the ton for reburning, and in some instances for road building. The foregoing is the best example of utilization under old methods.

In New York City much attention has been paid to the disposal of waste material, and recent investigation discloses the fact that the yearly traffic in old rubbers alone is about 700 tons. The price paid for such material averages about five cents per pound, making a yearly aggregate of $70,000 in this one product of the waste pile. The trade in old bottles is enormous. One house in New York keeps on hand a stock of at least five million bottles, receiving this material from all parts of the country, and does a large export trade with various European countries. (G. E. Waring.)

The realization of the disposal of garbage in a sanitary manner is only of about ten years growth, and comparatively little has been written on the subject, except by individuals interested in the various processes for utilization or destruction, who, as a rule, are not the best judges of a sanitary method. The financial side of the matter is kept to the fore, and every method, be it ever so highly recommended by interested parties, should be subjected to rigid investigation before favorable opinion is passed.

The selling or giving to farmers of this waste material, to be used as a food for cattle or swine, cannot be too strongly condemned. Dr. Werden, of Bridgeport, Conn., says that the increase in trichinosis in pigs fed on garbage from Boston, in the three or four years past, is from three to seventeen per cent., and the mortality from hog cholera among pigs fed on garbage in other parts of the State of Massachusetts is so large that the State authorities have realized that active measures must be pursued to prohibit this use of garbage. Dr. Werden furthermore states that in one of the New England towns that of the total mortality for one year, forty-two per cent. were infants. This very great infant mortality led to an investigation, revealing the fact that the milk dealers fed their cattle on garbage. To this fact was ascribed the increased mortality. The inadvisability of using garbage as food for cattle and pigs cannot be questioned, yet the spread of trichinosis and hog cholera by this means has not been proven. If we admit the increase of trichinosis among Massachusetts pigs to be due to the garbage feeding, it presupposes the existence of trichinæ in the garbage, and necessarily in the food materials likely to harbor such mites, prior to its introduction into the garbage pail. This could hardly be without a corresponding large number of individuals in the community from which the garbage came suffering from the disease.

The many methods and devices at present offered the sanitarian for the disposal of this waste material may be divided into two classes. The first class includes the incineration methods, or the total destruction as far as possible in a very hot fire; the second class includes the reduction methods, whereby the material is passed through a series of drying and solving processes, extracting the fatty materials, the residuum being utilized for fertilizers.

A utilization process is in use in some of the suburban districts of London, but the collections from these districts contain ashes and other refuse in addition to garbage. The material is passed through a series of screens that separates the articles of various sizes. Connected with one of the bins is a blower that carries the paper to a suitable bin. This is subsequently used in the manufacture of cardboard. After passing through three screens, the material is delivered upon a revolving table, around which boys are seated, whose duty it is to separate the material by hand. A subsequent screening completes the process. All the material is utilized and the establishment turns out a variety of manufactured products, including fertilizer, mortar and cardboard.

In St. Louis, during the year ending March 31, 1896, there was produced 38,406 tons of garbage. The population being 540,000, this would be a per capita daily production of 0.397 pound. During the year 1895 there was produced in Milwaukee 17,127 tons, a per capita daily production of 0.347 pound, figured on a population of 270,000. The production of garbage in Buffalo for two years is tabulated below:

Garbage delivered at the Baynes Garbage Crematory Works, Buffalo, N. Y.

Month.	1894.	1895.	1896.
January	,700	1,296	1,599
February	788	870	1,366
March	1,032	997	1,425
April	1,024	3,217	1,694
May	1,493	1,677	2,006
June	1,564	1,769	2,209
July	1,625	2,096	2,641
August	1,792	2,337	....
September	2,095	2,523	....
October	1,914	2,103	....
November	1,353	1,692	....
December	1,322	1,694	....
Total	16,702	20,191	....

Average production per diem, 1894—46 tons.

Average production per diem, 1895—55 tons.

Average per capita production per day, based on police census of 335,709—.320 pound.

The above figures tell us that in the three cities of Buffalo, St. Louis, and Milwaukee, there was produced in one year over 75,000 tons of garbage—an almost appalling amount of material, and well illustrating the importance of considering its sanitary disposal.

Furnaces designed for the total incineration of garbage are used to destroy all kinds of waste material—garbage, sewage sludge, night soil, bodies of animals, and so forth. One of the good furnaces on the market consists of two main chambers or flues extending the whole length of the furnace of twenty-five or thirty

feet. These flues are separated from each other by the grate bars and the chamber for receiving the ashes. The upper flue is the garbage chamber, and in cross section is five and one-half feet square, and designed to take at one charge about twenty cubic yards of garbage and five barrels of sludge or liquid material. The material to be incinerated is dumped into this upper chamber through man-holes in its roof. The necessary heat is obtained by a draft produced by a chimney at least 75 feet high and communicating with the lower flue. Two fires are used. The first or starting fire is at the stack end of the garbage chamber, and the flame from this fire passes over and through the material to be incinerated. At the forward end of the furnace and on a level with the lower chamber is placed the secondary fire. The watery vapor and gases produced by the primary fire pass forward to the front of the furnace, then downward over the secondary fire and through the lower or return flue into the chimney. In connection with the return flue are various air inlets for the purpose of accelerating the combustion. It is claimed that all noxious materials are thoroughly destroyed, and that, at the outlet of the chimney, nothing but a slightly visible vapor can be seen, and this without odor. The action of the furnace is continuous, the garbage being fed in at the top and ashes drawn off at the bottom as occasion demands.

The interior of the furnace is composed of massive blocks of firebrick with an outside sheathing of brick.

The surplus heat generated in this process can be profitably utilized in power production. The ash has been recommended for fertilizing purposes, but is not in great demand. It is much better fitted for filling purposes in the reclaiming of waste lands.

Of the utilization methods the following modified Vienna system may be considered a type. In this process the garbage is unloaded from the collecting wagons into steel cars, which are elevated to the third floor of the factory building and dumped into iron receiving or storage tanks, each with a capacity of about twenty tons. The receiving tanks can be hermetically sealed, and near the bottom there is a perforated diaphragm which allows the excess of water to drain from the mass and pass directly through pipes to the sewer. The proportion of this water varies from a small per cent. in warm weather to ten per cent. in wet weather. The material is removed as required from the lower opening of the receiving tanks situated on the second floor. The glass, bone

and other hard materials are culled out and the raw sorted garbage passed through chutes into the dryers on the ground floor. The culled bone, glass, and so forth, are placed in their respective tanks and given a thorough steaming. The bone is then passed to the mills, and after grinding is mixed with the finished tankage. The glass and other materials are stored in appropriate bins until a sufficient stock collects for selling.

The dryers are round, steam-jacketed chambers, fourteen feet long by four and a half feet in diameter, and contain a central shaft with projecting arms, which serve to keep the drying mass continually agitated. Steam is introduced into the jacket at a pressure of about fifty pounds per square inch, and, in addition, a continuous current of heated air is passed through the dryers at a rate of about 700 cubic feet per minute. The charge for a dryer varies from 2,300 pounds to 2,700 pounds, of which weight about 75 per cent. is lost in the five to seven hours usually given for drying. In the older plants this immense volume of watery vapor was allowed to pass from the stacks connected with each dryer directly into the atmosphere. By improved methods, this material is passed through suitable condensers, the resulting liquid passed into the sewer, and the remaining vapor conducted under the boilers to be completely consumed in the fires.

After discharging from the dryers, the material is elevated by means of an endless bucket belt to the third floor of the building and introduced into extractors. These chambers are similar in size and construction to the receiving tanks and have a working capacity of about ten tons. After receiving the charge the tank is sealed and its contents submerged in naphtha. By means of a steam coil the contents is kept heated about fourteen hours, the usual time necessary to thoroughly extract the grease. The naphtha, containing the grease in solution, is then drained off and conducted to the separator, an apparatus that volatilizes the naphtha, subsequently condensing it, when it is ready for further use in the same manner. The non-volatile grease is conducted to the settling tanks, where it is allowed to stand a sufficient length of time to separate any water that it may contain. It is then piped into the storage tanks. The amount of grease recovered varies from three-quarters per cent. in summer to two per cent. in the winter months.

After draining off the grease-containing naphtha, live steam is passed through the extractors to recover the remaining naphtha.

This naphtha and water vapor is condensed and the resulting liquid automatically separated, the water going to the sewer and the naphtha to the naphtha tanks.

The steam-moist, grease-extracted tankage is now passed through chutes directly into the dryers, where it is treated exactly in the same manner as the raw garbage. After thorough drying, the material is moved to the mill room and screened to remove the fine material that does not need grinding. The coarse stuff is passed through the mill, then mixed with the fine material separated in the screening, and finally the ground bone. This finished tankage is a dry, unchangeable powder, possessing an odor like coffee or chicory, and is used for diluting strong fertilizers. The average amount of constituents that render it of value for this purpose are about as follows:

Ammonia equivalent	2.75 per cent.
Bone Phosphate	3.75 per cent.
Potash	1.00 per cent.

The amount of moisture remaining in the finished tankage is about 11.00 per cent. From the total garbage operated upon, about 18.00 per cent. of tankage is obtained.

Such, in brief, is the method formerly in use in Buffalo, but latterly many improvements have been inaugurated—so many in fact as to make the present process entirely new. This latter and better method, from a hygienic standpoint, is a step in advance of the Vienna system, and is controlled by the same company. In this process, the garbage is introduced into digesting tanks of about ten tons capacity, and subjected to the action of steam under a pressure of 50 pounds per square inch, continued for about fourteen hours. During digestion the greater part of the grease is separated, and passing through a pipe connected with the bottom of the digester, together with some water, goes directly to the grease settling tank. Here the grease is separated from the water, the water being pumped to an evaporator and the grease to other tanks for further settling and purification. The effluent water in passing through the evaporator leaves a thick sludge, rich in ammonia compounds, and this is subsequently added to the tankage in driers. The water is condensed and passed directly into the sewer. Any noxious fumes that may not be condensed are piped to the fire holes and completely consumed.

After complete digestion of the garbage, it is removed from tanks and culled of the bone, glass and tin cans. After culling, it is subjected to heavy pressure, which removes a large per cent. of the remaining water and a little grease. This mixed fluid is conducted to the separating tanks, from which the grease is pumped to the grease tank and the water to the evaporators. The tankage is then introduced into the driers, together with the sludge residue left after evaporating the effluent water. After drying, the material is screened, ground, and mixed just as in the old process.

Such in brief are the two processes, both good, but the latter by far the superior from a sanitary point of view. Its great advantage consists in the fact that there is no culling of the offensive raw material, neither are there any offensive effluent waters. The only effluent is the condensed water from the evaporators, and this is without odor and entirely inoffensive. The vaporized material from the driers is large in volume and might well be condensed. This is the only point for criticism, yet this is not offensive ordinarily, but it would probably preclude the possibility of establishing such works in the centre of the city. With this slight defect removed, there are no reasons why such a process could not be conducted in the centre of any city and without offense.

The process used in New York City is similar in principle to the preceding, but the mechanical appliances are more perfect and reduce the manual labor to a minimum.

Many eminent sanitarians are of the opinion that the real solution of this vexed question is the household cremation, either by burning in the kitchen stove as rapidly as collected or by means of an incinerating box to be introduced through a slide in the kitchen stovepipe. A few hours' treatment in this box completely carbonizes the material, and the charcoal resulting can be readily burned in the stove or used in starting the fire. This method eliminates the unsightly and odorous garbage pail, and for small households is an ideal one. It cannot dispose of the question in large establishments, as hotels, hospitals and the like. Many small crematories are manufactured for use in such places with a greater or less degree of success. In sections of the country where fuel gas is largely used, this means of disposal would not be feasible at all times. During the winter the kitchen fire would be burning almost all the time and the incinerating box could easily burn the garbage collected, the dry, inocuous ash finally being deposited in the rubbish barrel. In the summer months,

when fires would not be running a greater length of time than was absolutely necessary, it is hardly probable that sufficient heat would be obtainable to dispose of the large amount of vegetable material necessarily collected at this time.

In conclusion, it is safe to affirm that no perfectly satisfactory method for all times and all places has yet been devised.

ABSURDITIES.—To attempt to borrow money on the plea of extreme poverty.—To lose money at play, and then fly into a passion about it.—To ask the publisher of a periodical how many copies he sells per issue.—To ask a wine merchant how old his wine is.—To make yourself generally disagreeable, and wonder that nobody will visit you, unless they gain some palpable advantage by it.—To get drunk, and complain the next morning of a headache.—To spend your earnings on liquor, and wonder that you are ragged.—To sit shivering in the cold because you won't have a fire till November.—To suppose that reviewers generally read more than the title-page of the works they praise or condemn.—To judge of people's piety by their attendance at church.—To keep your clerks on miserable salaries, and wonder at their robbing you.—Not to go to bed when you are tired and sleepy, because "it is not bed time."—To make your servants tell lies for you, and afterwards be angry because they tell lies for themselves.—To tell your own secrets, and believe other people will keep them.—To render a man a service voluntarily, and expect him to be grateful for it.—To expect to make people honest by hardening them in a jail, and afterwards sending them adrift without the means of getting work.—To fancy a thing is cheap because a low price is asked for it.—To say that a man is charitable because he subscribes to an hospital.—To keep a dog or a cat on short allowance, and complain of its being a thief.—To degrade human nature in the hope of improving it.—To praise the beauty of a woman's hair before you know whether it did not once belong to somebody else.—To expect that your tradespeople will give you long credit if they generally see you in shabby clothes.—To arrive at the age of fifty, and be surprised at any vice, folly, or absurdity your fellow creatures may be guilty of.

HYGIENE OF THE STABLE.

By HARVEY B. BASHORE, M. D.

It is only recently that we are beginning to pay any attention to stable sanitation. Formerly such a thing would have been thought beneath the dignity of any respectable physician, but the more we learn about tuberculosis and kindred diseases, and their relation to human life and happiness, the more we honor the means, wherever or whatever they are, which tend to lessen these scourges of humanity.

It is very rare indeed that any sanitary judgment is asked in the building of a stable, and when it is, it is often incompetent. Dr. Bell has told me of a stable in Brooklyn which the proprietor advertised as a model, and which he was invited to inspect, which by actual measurement provided only a little over 400 cubic feet of air space per horse; and the "air shaft" consisted of a stretch of four-inch tin pipe! The question of air space, whether for horses or for cows, is of the most vital importance; lack of attention to this is probably the most frequent cause of ill-health, especially in cows.

We all know that cattle in their primitive state rarely ever suffer from tuberculosis, but that in the domesticated it becomes a fearful danger. Almost all cow stables are remarkably defective in the amount of air space, and this is especially important, too, for cows are more prone to tuberculosis than horses, and on account of using their products—milk and meat—we run double danger. Take the stable on almost any farm—I am not thinking now of the few model farms scattered like great object lessons here and there, but those which go to form the great majority—the stable is commonly the basement of the barn proper, with a certain number of stalls dividing it. There is filth everywhere. Not only is this the living place of the animals, but, worse than all, the cows are here milked.

I sometimes doubt if many of us could continue to use milk if we could see the whole procedure from beginning to end.

These barn basements, even in summer, with all the windows and doors open, are damp, dark and generally sunless; when cold weather comes the windows are closed with straw, or even boards, and sunlight and oxygen become rare articles during the long and dreary winter.

The truth of the matter is that the construction of the ordinary barn is altogether wrong. Instead of being housed in a dark and cheerless cellar, cattle, most particularly, should have a bright, dry and commodious room with plenary air supply, and cleanliness should be a constant factor. Cow stables, indeed, are but rarely kept as clean as they should be, and herein lies a dangerous contribution to the dampness promotive of tuberculosis. Only a few days since I visited one of these basement stables where five cows are kept; the ventilation in this instance was not so bad, but there was no attempt at cleanliness. There was plenty of fresh straw lying about, but I was suspicious of what it covered. On questioning the proprietor, who is a fair example of Pennsylvania farmers, I learned that the stable was "cleaned" twice a week, and that fresh straw was thrown over the filth every evening; so it was dry on top but wet and polluted underneath. And this is the kind of stable—this Augean-like stable—from which most of us, whether we live in town or country, get our milk supply.

There are, it is true, some stables kept by trained dairymen, which are comparatively clean, but they constitute a very small percentage of those upon which we depend for our milk supply.

Fresh air, sunlight and cleanliness should be regarded as the primal conditions for the maintenance of the health of cattle, as well as of men. But the cow stable, as it now generally obtains, is, in our judgment, among the foremost culture beds of that great "white plague"—pulmonary consumption—which kills one-seventh of all who die. Hence it is that we urge war on filthy stables as an important and too much neglected means of propagating that dread disease.

In building a stable, we should see to it that we have, above all things, ample air space. I do not know exactly the amount of CO_2 expelled and oxygen consumed by an ordinary cow or horse, but I do know that it is vastly greater than in man—three or four times more at least. So if a man requires 1,000 cubic feet of air space, 3,000 or 4,000 would hardly be too much for a cow; somewhat less than this would perhaps answer, on account of the fact

that the air in the stable could be changed more often than in the house.*

Hardwood stalls, iron feed racks and concrete floors are all very nice, but ordinary pine stalls, which can be whitewashed every year, with a hard clay floor, answers probably as well, if not better; the floor should have a suitable incline and at the foot there should be an open gutter.

Washing out the stalls is worse than useless, even when there is a concrete floor, for it favors dampness. The soiled straw should be removed every day, and if necessary some dry earth may be thrown over the wet places. A barrel of dry earth kept in the stable and used for this purpose will do much toward eliminating dampness.

Dr. Poore, the distinguished British sanitarian, tells of a stable he visited near Alesford, where this dry method was used with complete satisfaction, in marked contrast to another stable of the more costly kind with brick floors, water taps, &c., which gave evidence of much dampness and putrefaction.

In England considerable attention has been given to the question of housing cattle, and the health officers of the local government board are taking steps to render cow stables more wholesome and less dangerous to the community.

It is time that something be done on the same line in this country. The inspection by the State of all herds and the killing of the tuberculous ones is a step in the right direction, but the cause of danger still remains in many cases, and although the prominent foci of infection are eliminated, cows will still get tuberculosis until they are better housed and better cared for.

HARVEY B. BASHORE.

West Fairview, Pa., March 19, 1898.

DIRT AND DIRTY MILK.—Dirt has been defined as matter in the wrong place. Growing plants thrive and flourish in the presence of material that is foul and noxious to growing animals. There is nothing dirty or filthy when it is in the right place. Cow dung,

*Average horses and cows, at rest, require 3,000 cubic inches of air per minute for *breathing*; of this 4.7 per cent., or 141 cubic inches, is converted into carbon dioxide. It is generally recognized by competent veterinary sanitarians that, to keep the air of stables in the highest degree of practical purity, not less than 3,000 cubic feet of air per hour is required: 600 times the amount of air spoilt. Multiplying then by 600 the cubic feet of air which a horse or cow renders irrespirable, the amount of fresh air *per head* per hour should be 7,920 cubic feet, and space per head should be 1,584 cubic feet.—Editor S.

urine, and effete matter from the lungs and skin will make healthy fodder for the animals that eliminate it when the material is put in the right place under proper conditions. But cow dung plastered over the sides of the cow, or allowed to accumulate in the living place with the animal that drops it, standing constantly in the dung and urine she herself makes, besides fouling the air, gives rise to foot-foul and other painful afflictions that are markedly debilitating; breathing over and over again the same air must lead to pulmonary susceptibility to disease; feeding on the refuse matter from distilleries, breweries, glucose and starch factories must tend to nutritive ailments, and all these common conditions of our dairies generate a marked susceptibility to profound constitutional diseases of which tuberculosis is the chief. Many people who are not familiar with the condition of a large number of our dairy stables may imagine that there is some exaggeration in the foregoing statements, but I have never seen any one who, without previous knowledge of the existing conditions, after having made an inspection of a number of dairies furnishing milk for food, has not returned without a profound disgust at the state of affairs. It is not uncommon to find fifteen or twenty cows confined in a damp basement where no effort is made to observe cleanliness, and every effort possible is made to exclude external air during the cold weather, and thus the cows are kept warm by their own reeking breath, made doubly noxious by the accumulating filth and the stench from the refuse food.

The milk from these animals is received in vessels seldom or never properly cleaned, and taken to be bottled or canned into the dwelling house, where poverty and a natural tendency to shiftlessness make everything as dirty as it is possible to be. I will guarantee to direct anybody to dairies where the foregoing conditions prevail and the milk is sold for infant feeding. Will any reasonable man affirm that the State is doing its whole duty when it sends an inspector to such a stable to kill a few of the cows and do nothing more? The following is the State law that applies to just these cases, and is copied from the Revised Statutes, vol. i, under the head of Dairy Products, sec. 12:

"*The Proper Care of Cows, and using Diseased Milk in making Articles of Food.*—No person shall keep cows for the productions of milk for market, or for sale or exchange, or for manufacturing the same or cream from the same into articles of food, in a crowded or unhealthy condition, or feed the cows on food that is unhealthy

or that produces impure, unhealthy, diseased, or unwholesome milk. No person shall manufacture from impure, unhealthy, diseased, or unwholesome milk, or of cream from the same, any article of food. Whoever violates the provisions of this section is guilty of a misdemeanor, and shall be punished by a fine of not less than twenty-five dollars nor more than two hundred dollars, or by imprisonment of not less than one month nor more than four months, or by both such fine and imprisonment for the first offense, and by four months' imprisonment for each subsequent offense."

Would it be unreasonable to assert that the enforcement of this section of the statute would do more for the stamping out of tuberculosis than all the efforts that have heretofore been made by State authorities?—Dr. C. F. Brush, from "What Must We Do to Be Saved from Tuberculosis?"—New York Medical Journal, August 14, 1897.

THE CLIMATE FOR CONSUMPTIVES.

By WILLIAM F. WAUGH, A. M., M. D.,

Professor of Practice and Clinical Medicine, Illinois Medical College.

Let it be clearly understood what can reasonably be expected from climate. We may affirm positively that no known climate, hot or cold, wet or dry, high or low, can truthfully claim that its air contains ingredients or conditions that are destructive to the tubercle bacillus, or in which this ubiquitous micro-organism cannot flourish. Tentative claims have been put forward from time to time that the air of a certain place was fatal to the bacillus because of the ozone present, and other localities have claimed a like effect from the absence of ozone; but not a shadow of proof has been adduced in favor of either of these contradictory hypotheses. Even for the balsamic exhalations of the piney sands of the Carolinas the suggestion of a special toxic influence of the turpentine vapors has scarcely been made, and assuredly not proved.

The benefit, then, to be derived from climate must be assigned either (1) to breathing air free from impurities, tubercle bacilli

included; or (2) to such influences as tend to strengthen the patient and increase his power of resisting the disease.

As to the benefit of inhaling pure air, there can be no question. Tuberculosis is more apt to occur in individuals who reside in houses where consumptives have died. The worst cases of acute tuberculosis I have ever known were in persons who slept in very small, unventilated bedrooms with consumptives who expectorated over the walls and bed-clothing. In one such instance death from acute pulmonary tuberculosis occurred in four days.

Many places have won repute as tubercle-free resorts, but as they became populated with consumptives they gradually lost their good qualities. At present one generally advises the tuberculous patient to keep away from any place where many other such cases congregate.

It may be remarked that the places where tuberculosis is scarce are those in which population is scarcer. The Alleghenies were once said to be free from phthisis, but as the mountain districts were settled the tubercle bacillus, like Satan, came too. So in succession the valley of the Mississippi, the Western prairies, the chilly fields of Minnesota, the Pacific slopes, the arid plains of Arizona and the heights of the Rocky Mountains, have been vaunted as suitable residences for consumptives. Evidence has been presented as to the diminution of tuberculosis as one rises above the sea-level; but the corresponding diminution of inhabitants has not been considered. A small percentage of the American people resides over 5,000 feet above the sea, and very few at an elevation of 7,000 feet. That among these few there should not be many consumptives is to be expected, but that there are any is sadly significant.

We may say, then, that the best climate for the consumptive is that where he can best breathe an atmosphere free from tubercle bacilli, other pathogenic micro-organisms and noxious elements of other sorts, and where his own general health will be best affected. It is obvious that all cases will not find the latter condition in the same locality. Some individuals find health in the crisp, cold air of the Northwest; to others it is death. Some find the moist atmosphere of Florida best suited to them, while for many others the dry air of the region extending north and west from San Antonio to the Rockies proves most advantageous. Sudden changes, dampness, high extremes of heat and cold, are injurious. A climate that permits the largest proportion of the

time to be spent in the open air is the best. The eternal sunshine of the South Sea Islands seems to be near the ideal. A summer residence in the Idaho mountains in summer, gradually going south as the fall comes on, with the winter spent in Mexico, Central or South America, suits many persons better than remaining in one place the whole year.

But the question of accommodation must be considered, and of accessibility, communications and attendance. Some excellent localities are closed against the "one-lunger" by the fears of the natives, to whom the bacillus is an undesirable immigrant. Good medical attendance, nursing and feeding may be wanting in otherwise ideal resorts. No end of harm has been done by the promulgation of the theory that a suitable climate enables the patient to dispense with all care and treatment. I have known cases in which there had been a steady decline in the number of tubercle bacilli found in the sputa, with a corresponding improvement in the symptoms, until some ill-informed adviser recommended the stoppage of all treatment and reliance upon the climate alone, when the bacilli at once began to multiply and resume their destructive operations. There is not a popular resort for consumptives in existence whose cemeteries are not crowded with victims of this fallacious idea. For the vast majority of tuberculous persons the best climate is that in which they can obtain the best medical treatment and nursing, the society of congenial friends and the comforts of civilized life. To them the search for a curative climate is strictly on a line with Ponce de Leon's quest of the fountain of life.

But when these conditions are realized, I would place the most probable location of the future ideal sanatorium for consumptives somewhere between the Rockies and the Coast Range, where the patient could ascend the mountains in summer and return to the sheltered plains in winter. Here the air is dry and pure; the days when the sun shines are numerous; no harm comes from sleeping in the open air; cultivation obtains ideal conditions under irrigation, and the means of access and communication are abundant. There should be a central sanatorium and hospital, while convalescents should be located in detached iron cottages, which can be taken down, disinfected and set up in other places when vacated. As the patient grows more capable of self help, he can be removed farther from the central institution, but he must always remain under the supervision of the physician. The vast extent of the

uninhabited country offers excellent opportunities for such a system, and the cheapness of land would enable the scheme to be put in operation at comparatively little cost. And this is essential, for of the ten millions of the present citizens of the United States who will die of tuberculosis, the vast majority are not millionaires.

Were a group of really valuable mineral springs to be discovered in this region, similar to those of Saratoga or the Arkansas Hot Springs, nothing would remain but the realization of this ideal, with a sufficiency of funds and of business and professional ability. It would be by no means an extravagant expectation then to see the Southwestern plains peopled by a population of hundreds of thousands, who would there find the best conditions for the cure of tuberculosis, and who in return for the restoration of health would irrigate and cultivate the soil, build cities, run railroads, and develop the sleeping resources of this region.

Chicago, Ill.

THE DENSITIES OF NITROGEN, OXYGEN AND ARGON, AND THE COMPOSITION OF ATMOSPHERIC AIR.*

By A. LEDUC.

As the discovery of argon has modified same numerical results concerning atomic weights, molecular volumes, and, chiefly, the density of nitrogen, which I have heretofore published, I have again been led to further experiment on some gases,† particularly oxygen, the density of which, according to my previous experiments, seemed to me to be a little too low, relatively to that of chemical nitrogen.

Nitrogen.—Lord Rayleigh, who had already determined the density of nitrogen prepared in different ways, has done me the honor of communicating in writing his experiments, the chief object of which was to ascertain whether the density of this gas were independent of the process of preparation. I propose to find, as

*Translated from *Comptes Rendus* by Chief Engineer Isherwood, U. S. Navy.—*American Gas Light Journal.*

†Carried on in the Physical Laboratory of the Sorbonne.

exactly as possible, the density of nitrogen, prepared by the following processes that seem best adapted to furnish it in a state of purity:

1. Decomposition of the nitrite of ammonium by heat. The gas obtained contains considerable quantities of the oxides of nitrogen and of ammoniacal gas; it is purified by a long column of copper, followed by oxide of copper raised to incandescence.

2. Decomposition of the nitrate of ammonium by heat. The impure nitrogen protoxide thus obtained is treated as above.

3. Decomposition of nitric oxide by incandescent copper.

4. Decomposition of ammoniacal gas by incandescent oxide of copper; which oxide is followed by a column of copper that has for its object the decomposition of the oxides of nitrogen produced by the preceding reactions.

In all cases the nitrogen obtained traverses, before entering the weighing globe, a column of potassa and another of pumice stone saturated with H_2SO_4 and a U-tube charged with phosphoric anhydride.

A vacuum is made in all parts of the apparatus, previous to the operations, in order to prevent the presence of argon.

The weights of nitrogen, at 0° and 76 cm., contained in the globe, are comprised between 2 gr. 0.8467 and 2 gr. 0.8474; their mean, 2 gr. 0.8470, corresponds, all corrections made, to the density .96717* relatively to the density of air.

Oxygen.—I have previously found for the density of oxygen relatively to the density of air 1.10506. Although this number is the result of only a single series of experiments—electrolysis of a solution of potassa—I have accepted it without hesitation because it harmonizes with other results obtained up to the present time.

After the discovery of argon this number appeared to me to be a little too low, and I then prepared the oxygen by decomposing by heat the crystallized permanganate of potassa. Before entering the weighing globe, the gas passed over potassa, acidified pumice and sulphuric anhydride. The density was found to be near 1.10527.

I now prepared the oxygen by electrolysis, but instead of a short column of spongy platinum, I employed for eliminating the hydrogen a long column of oxide of copper at a dull red heat. Three very concordant experiments gave 1.10521.

*As I have remarked in previous publications, the last decimal may have an error of several units. Further, as the present number has much probability of being too great, it can, with prudence, be reduced to 0.9671.

Convinced by these latter experiments of the insufficiency of the spongy platinum in the preceding ones, I accept for the density of oxygen 1.10523.

Argon.—I have many times had occasion to remark that the close concordance of the numbers obtained by Lord Rayleigh and by myself for the density of atmospheric nitrogen implied the constancy of the proportion of argon in the atmosphere. This point has recently been put beyond doubt by Mr. Schloesing, Jr.,* who has found the proportion of argon in atmospheric nitrogen to be 0.0119.

Designate by d, d' and x, the densities of chemical nitrogen, atmospheric nitrogen and argon.

$$\text{We have } (d' = 0.97203).$$
$$d' = 0.0119\,x + (1-0.0119)\,d.$$
$$\text{Whence results } x = 1.376.$$

Or, relatively to hydrogen, 19.80, instead of 19.9, heretofore accepted.

Résumé.—It will be useful to fix these results by giving the weight of a liter of each of these gases at 0°, both under the pressure of a bayre (10^6 C. G. S.) and under the normal pressure of the atmosphere at Paris, as follows:

Pressure.	Oxygen.	Nitrogen.	Argon.
1 Barye.....	1 gr. 4,100	1 gr. 2,338	1 gr. 755
1 Atmosphere...	1 gr. 4,293	1 gr. 2,507	1 gr. 780

I shall return hereafter to the atomic weights of nitrogen and oxygen.

Composition of Atmospheric Air.—I have a great many times determined the composition of dry atmospheric air deprived of carbonic acid, etc., and have found that it contained in mean 232-1000 of its weight of oxygen.

The consideration of the densities of oxygen and atmospheric nitrogen† leads to the number 232.08, which can be taken as identical with the preceding.

**Comtes Rendus*, November 2, 1896.

†A. Leduc. *Comptes Rendus*, August 4, 1890. The employment of the number 1.10506 for the density of oxygen led me, at that time, to 232.35. The difference seems to me to be due to experimental error.

On the other hand, the 768-1000 of atmospheric nitrogen divides proportionally to the numbers 9,881 × 0.96717 and 119 × 1.376, which gives 755-1000 for the nitrogen and 13-1000 for the argon.

The centesimal composition of mean atmospheric air is consequently represented by the following table:

	Nitrogen.	Oxygen.	Argon.
By weight.....	75.5	23.2	1.3
By volume.....	78.06	21.0	0.94

TOBACCO STUNTING.

THE EFFECTS OF NICOTINE ON GROWTH.

By J. W. SEAVER, A. M., M. D.,
Director Physical Laboratory, Yale College, New Haven, Conn.

The tobacco plant is well known by botanists as one of a large family, the Solanacae, and a peculiarity of them all is the production, in larger or smaller quantities, of some narcotic drug, nicotine being the principal one of the group. This drug is found in the plant to the extent of from three to nine per cent., the latter being an excessively large amount. The larger part of the product put upon the market contains from three to five per cent. The last census report shows that the export to foreign nations is about $40,000,000 worth, and that we produce 500,000,000 pounds per year. It becomes as important a subject with us as that of bread and butter, for our community spends about as much for tobacco as for flour. But its greatest importance relates to the possible physical effects it may have, especially as used by the young people in the community. Somebody has said that in the combustion of tobacco in smoking the nicotine is entirely destroyed, broken up into oils and acids, and that the nicotine itself is not taken into the system. The combustion of tobacco, under ordinary conditions, does not destroy the drug. Kissling recovered 52 per cent. of it from the smoke of a sample containing 3.75 per cent. of nicotine, and from a lower sample 84 per cent.

I speak of nicotine as a drug because, if you take up any book on materia medica, you will find that tobacco is discussed in the

same way as opium, quinine, or any of the drugs that are in common use by physicians, and that its physiological effects are stated there without prejudice. The amount of nicotine derived from a cigar in smoking is somewhere in the neighborhood of one per cent., if we presume that one-half is destroyed by the process of combustion and the other half drawn in with the smoke; and this is especially true in the use of a pipe, where the tobacco is completely burned out. As to absorption, it is a very volatile oil-like material, soluble in water, glycerine, oils, alcohol, etc., so that that part which touches upon the mucous surfaces passes into solution and is pretty largely picked up. White tells us that a dose of one-thirtieth of a grain will produce toxic symptoms in the body, so that we need absorb only a small proportion of the amount actually taken in during the process of smoking of a cigar or a pipeful of tobacco to reach the limit of easy toleration by the system. Looking upon the matter from this standpoint, we can appreciate the fact that there is an immense amount of drug-taking in the community, and we might expect that there would be such physical effects as could be readily determined and stated.

All through the history of the use of tobacco, which goes back some 300 years, different writers have abused it and praised it, until one who might attempt to gain information would be at a loss to come to a definite conclusion as to its merits or demerits. Burton, in the "Anatomy of Melancholy," probably gives it its due when he says: "Tobacco, divine, rare, super-excellent tobacco! which goes far beyond all the panaceas, potable gold, and philosophers' stones; is a sovereign remedy in all diseases; a good vomit, I confess; a virtuous herb if it be well qualified, opportunely taken, and medicinally used; but, as it is commonly abused by most men, which take it as tinkers do ale, 'tis a plague, a mischief, a violent purge of goods, lands, and health."

Now, this is one of the peculiar drugs—opium is another—which, while they are to a certain extent harmful, have certain influences that are favorable, consequently a balance must be drawn between the good and bad influences. I wish to be fair in this matter, and say that the use of tobacco does not pass as entirely an evil, because we have plenty of people who are willing to bear witness to the fact that they get a certain amount of nervous comfort from it. Iet us look upon it as it influences the human body, especially in the period of growth.

It has been my privilege to spend the active part of my life in working with young men, and I naturally am interested in that particular animal. The boy is always inclined to follow out those instincts to which we refer when we say that "he apes his elders." That is, if there is any act which he is in the habit of seeing a grown person do, the boy (or girl) wishes to imitate it, be it good or bad; and I fancy this is the reason why we find so many boys smoking, hoping thereby to gain a certain reputation for maturity among their mates. This desire to be mature is common to all of us. We did not lay aside the idea with our knickerbockers.

Among boys in secondary schools the tobacco habit has become very general. In these schools the boys are for the first time away from home, and they are allowed to mature somewhat too rapidly for their future keeping qualities. I have spoken to the principal of one of our largest preparatory schools within a year regarding the health of students who smoke, and, while he does not use tobacco himself, and says that "it is the bane of the school, and more boys break down in health and are sent home from its influence than from any other," yet there is no effort to control this use of the drug by the pupils. Unfortunately, in very many of these institutions there is an unpleasant condition of being dependent for financial income on the tuition of the students. In very few of these schools is there direct personal supervision of the health of the students, and the physical influences that have affected their growth or health are not recorded until the young men reach college, where it is possible, by comparing the measurements and tests of large numbers of young men, to determine in a fairly exact manner what influences have tended toward physical deterioration, and what have tended toward growth and improvement.

A tabulation of the records of the students who entered Yale in nine years, when all of the young men were examined and measured, shows that the smokers averaged fifteen months older than the non-smokers, but that their size—except in weight, which was one and four-tenths kilograms more—was inferior in height to the extent of seven millimeters, and in lung-capacity to the extent of eighty cubic centimeters. The observed rate of growth at this age would lead us to expect that the smokers, from their greater age, would surpass the others by one kilogram in weight, two millimeters in height, and one hundred cubic centimeters in lung-capacity.

The difference in age in the two groups points to an age limit to parental restraint, and raises the inquiry as to what might supplement this influence. The wide variation in lung-capacity demonstrates an influence on lung tissue that is also illustrated below.

The study of drugs on the muscular and nervous systems has led to certain valuable conclusions. Dr. Foster, in his "Physiology," speaks of the influence of nicotine on the nervous tissues, especially on the vagi, as paralyzing their activity, thus allowing the heart muscle to wear itself out. With this information we can easily understand how, in the beginning of the habit of smoking, the influence of nicotine causes so much disturbance to the circulation, for the vagus is the great controlling nerve of the heart, and that organ first gives obvious response to the poison. The influence of nicotine may be counteracted by the administration of powerful heart stimulants, like strychnine, caffeine, alcohol, etc. The whole nervous system is affected to some extent by even moderate doses of nicotine. This may be seen by its effect upon the pupil of the eye, where there is temporary dilation, followed by prolonged contraction of the pupil, which behaves very much as it would under the local influence of pilocarpine, or under the systemic influence of full doses of morphine. Where there is prolonged use of the drug the bad effects are disclosed in the optic disk, which is the end of the optic nerve, readily seen in an examination of the fundus of the eye, and which is the only large nerve that is laid bare to ocular observation. There appears to be less irritation of the brain structure and the efferent (motor) nerves than of the afferent (sensory) nerves, but the power of fine coördination is decidedly lowered by the drug. The muscle cells are also apparently only slightly affected by it, but, the nerve supply to the muscles being affected, the practical motor ability is greatly impaired. This has been thoroughly demonstrated by experiments carried out by Dr. W. P. Lombard of the University of Michigan, who has shown that the administration of even moderate amounts of tobacco in the form of smoke lowers the working power of the human muscle by a high percentage, and there seemed to be no compensation for lowered temporary ability in increased duration of it. His experiments were made with Mosso's ergograph, and his results may be crudely summarized as follows: In from five to ten minutes after beginning to smoke an ordinary cigar muscular power began to diminish, and in an hour,

when the cigar was burnt, it had fallen to about 25 per cent. of its initial value. The total work of the time of depression, compared with a similar normal period, was 24.2 to 44.8.

So far as the alimentary tract is concerned, there is a decided stimulation of the flow of peptic fluids. For this reason tobacco has been recommended as a sort of gastric stimulant after eating, and it undoubtedly acts in this particular way. If this be true, however, the ordinary use of the drug must be extremely destructive to the digestive process. We have all chewed gum before dinner until, when we came to eat and tried to chew dry food, there was no saliva to mix with it, and we ate with discomfort. In this case exactly the same thing happened to the salivary glands that would happen to the peptic glands if one were to smoke before meals during the period of rest for the stomach, for the gastric glands would be depleted, the fluids poured forth into the stomach under the stimulation, not being retained in that organ by food to be digested, would pass on into the intestinal tract, and when food was finally taken the peptic cells would be unable to pour forth adequate solvents for the proteid mass, and digestion would be delayed until such solvents could be formed by cellular metabolism. Meanwhile, the food would be retained in the stomach in a warm and moist condition, favorable for the development of decomposition germs, which must always be present in the food we eat. The result of the decomposition process is the production of acids that are extremely irritating and cause the discomforts that are so familiar to the dyspeptic. Not only has the food been manufactured into chemicals hostile to the organism, but, so far as future nutrition is concerned, it is actually lost, for the physiological cost of reducing these decomposition products to available forms for absorption and use is more than the available heat that can finally be produced in the oxidation.

Regarding glandular activity, it may be said that nicotine stimulates secretion in general, as is illustrated by the influence upon the mucous glands of the mouth and general alimentary tract. This over-stimulation of the mucous area would naturally lead to the development of catarrhal affections, and it would seem that this drug was contra-indicated in all forms of tendency to catarrhal diseases. This must mean, if the popular estimate of the condition of the New England nose is correct, that few Yankees, at least, should use tobacco.

Now I ought to speak of one quality of tobacco smoke that

seems to be sanitary to a certain extent, and that is, that it has a considerable antiseptic value. If a person is so slovenly that he does not care for his teeth as he ought, it may be a preservative of them; and in certain catarrhal conditions one could almost be pardoned for the offensive fumigation on this same ground. I speak of this because I wish to give whatever credit is due, and this seems a fair statement of the result of experiments in the matter.

What is known of the influence of nicotine upon the blood may be briefly summarized. Some physiologists have claimed that the blood corpuscles seemed to assume a notched appearance; but this is believed now to have been due to the handling of the corpuscles while on the microscopic slide, and the influence of nicotine upon the blood corpuscles is believed to-day to be comparatively slight, although the spectrum of the blood is altered, showing that they are affected in some way. It is true that anaemia is a constant accompaniment of chronic nicotine poisoning, but this is due to the disastrous results of the poison upon the digestive system, which does not prepare abundant nutriment for the blood current, and the anaemia should therefore be referred to starvation rather than to corpuscular degeneration.

Another proof of the physical deterioration produced by chronic nicotine poisoning is found in a report by R. L. McDonnell, regarding the family life of cigar-makers in New York City. He reports that in 337 families there was an average of but 1.63 children to a family. The conclusions to be drawn from this need not be pointed out.

The effect of nicotine on growth is very measurable, and the following figures are presented as a fairly satisfactory demonstration of the extent of the interference with growth that may be expected in boys from 16 to 25 years of age, when they are believed to have reached full maturity.

For purposes of comparison the men composing a class in Yale have been divided into three groups. The first is made up of those who do not use tobacco in any form; the second consists of those who have used it regularly for at least a year of the college course; the third group includes the irregular users. A compilation of the anthropometric data on this basis shows that during the period of undergraduate life, which is essentially 3½ years, the first group grows in weight 10.4 per cent. more than the second, and 6.6 per cent. more than the third. In height the first group grows 24 per cent. more than the second, and 11 per

cent. more than the third; in girth of chest the first group grows 26.7 per cent. more than the second, and 22 more than the third; in the capacity of lungs the first group gains 77 per cent. more than the second, and 49.5 per cent. more than the third.

These results are essentially the same as those obtained by Dr. E. Hitchcock of Amherst College, who observed a similar group of young men in a manner entirely independent. He says: "In separating the smokers from the non-smokers, it appears that in the item of weight the non-smokers have increased 24 per cent. more than the smokers; in growth in height they have surpassed them 37 per cent., and in chest girth 42 per cent. And in lung capacity there is a difference of 8.36 cubic inches (this is about 75 per cent.) in favor of the non-smokers, which is three per cent. of the total average lung capacity of the class."

The widely differing growth in capacity of lungs points to the influence of tobacco on respiration. Inspiration is essentially a muscular act, and as such would be seriously impeded by nicotine. But even farther than this must act the irritating substances of a smoke which readily causes inflammation and soreness of any mucous membrane. Now, to fully expand the lungs under such conditions is uncomfortable, if not impossible, and respiration degenerates into an incomplete act.

I do not know how we can compare the work of the users of tobacco with that of the non-users in mental lines as we can in physical lines. I can tell you absolutely whether a man has gained a pound in weight during the year, but I cannot tell you by any such definite means the mental progress that has gone on in that time. We must always be exceedingly careful in handling statistics of the mental process. Out of our highest scholarship men only a very small percentage (about five) use tobacco, while of the men who do not get appointments over 60 per cent. are tobacco-users. But this does not mean that mental decrepitude follows the use of tobacco, for we may read the results in another way, viz.: the kind of mind that permits its possessor to become addicted to a habit that is primarily offensive and deteriorating is the kind of mind that will be graded low on general intellectual tests.

If the whole period of physical growth be divided into seven or eight year periods, according to the physiological phases of our development, we should have the third period, devoted to the rounding-out processes, begin at about the time when the most

strenuous mental application is begun, and when the opportunities for outdoor recreation are decidedly curtailed. It is at this period that the tobacco habit usually is begun, if it is begun at all. This is the period of the development of high muscular coördination, and it is well to note that in mental processes it is the period of the development of the logical faculties. Whether we believe, with some psychologists, that there is a direct relation between muscular ability and mental power, or not, we must believe that any curtailment of the activity of the great blood-containing and heat-producing tissue (the muscles) must react unfavorably upon the nerve structure, which depends so largely upon outside sources for its material for work, if not for its method of work. Furthermore, the young animal seems to be especially susceptible to this poison, but the system can adjust itself so as to counteract the ordinary influence of it, and go on with comparatively little interference. As a machine that is obstructed to a certain extent can nevertheless apply a part of its energy to the sweeping away of the obstruction, so the organic machine can divert a certain amount of its energy to the elimination of this poisonous element, but only the residuum is available for normal processes of growth and functional activity.

Whenever it is desired to secure the highest possible working ability by the organism, as in athletic contests, where the maximum of effort is demanded, all motor-depressant influences are removed as far as possible, tobacco being one of the first substances forbidden. As a large part of the functional activity during the rounding-out period pertains to growth, would it not seem logical to remove from the system all motor depressants, in order that this line of activity may find its highest resultant in increased size and improved activity? This position has been taken by the directors of government schools, not only in this country, but in Europe, where the highest efficiency of the pupils is made the object of the schools, and where efficiently trained inspection, freed from personal appeals and special considerations, leaves the directors at liberty to manage the pupils upon the most approved scientific principles. It is satisfactory to note also that many private schools have taken this advanced position within the last ten years. May we not believe that, with a higher grade of intelligence among the patrons of schools, the same higher standard will be demanded soon in all similar institutions?—From the Journal of Inebriety, April, 1897.

THE EVIL RESULTS OF PRESENT EDUCATIONAL METHODS.*

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In order to avoid all misapprehensions, I desire to say that whatever criticism of our present school system I may give utterance to will not be given in a spirit of hostility, but solely with a view of calling attention to that part of the school régime which in my opinion is causing positive injury to the pupils. Nor is it my purpose to detract in any manner from the ability, efficiency or honesty of purpose of the teachers who are engaged in our public schools. I have no doubt the vast majority of them are conscientious in their calling and should not be held responsible for the results of a pernicious system which is laid down for them to follow, and which they are powerless to change.

The question whether our present system of school education is consistent with good health, or whether it is injurious to the physical and mental well-being of the pupils, is certainly a question of supreme importance. Yet school hygiene in so far as it relates to the training and development of the mind and the laws of mental health is the least understood and the most neglected of all the various departments embraced in the field of sanitary science. Why there should be so much apathy and indifference in regard to a matter of such vital importance can only be explained under the assumption that the people have implicit confidence in the American educational machine, and take it for granted that the system which has been formulated and is constantly being modernized by our educators is as perfect as human ingenuity and superior intellect can make it. Whenever a child breaks down in school the failure is attributed to ill health, or to some constitutional defect. The fact that the majority of its fellows bear the strain and burden of school life with apparent impunity is regarded as sufficient evidence that its invalidism is due to phy-

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sical or mental inferiority. Unfortunately, the theory of the survival of the fittest does not apply in this instance—rather the converse is true, and it is usually those possessed of the most delicate nervous organization and the brightest intellects who first succumb to a cruel system of brain-forcing.

The youth of the present day are living under the reign of the schoolmaster. There is a morbid desire on the part of parents to have their children go through an extensive curriculum of studies, many of which can never be made available for any purpose in life. It is a system of education which does not educate, but which leaves the mind befogged with a multiplicity of ideas, not one of which they clearly comprehend. That it falls short of the purpose for which it is designed, is, however, the least of its faults deserving condemnation. The fact that the pupils are all obliged to conform to one uniform standard of cast-iron rigidity, and that studies are crowded upon them far in advance of their brain development is an outrage and a crime against nature. The evil results of such a course can scarcely be overestimated. A sound mind in a sound body is an often-quoted old adage, but it is equally true that the body cannot remain sound very long if the brain is kept in a constant state of exhaustion by severe mental strain and overwork.

In casting about for information on this subject I found everybody willing to admit that the studies in our common schools are too numerous, and the tasks entirely too severe for the pupil of average intellect; and that they are opposed to the pernicious system of cramming which is now universally in operation. Yet there seems to be no effort made toward correcting the evil, but to the contrary, year after year new studies are added and new burdens heaped upon the defenseless pupils, without a thought to the irreparable damage that may result. Parents give no attention to the matter so long as their children present a report of good grades, and when they fail in doing so the blame is placed upon the pupil, and quite frequently upon the teacher. It never occurs to them that there might be something radically wrong with the educational institution. So the machine keeps on at the same rate of speed, and the merciless brain-prodding continues. It matters not how weary the feeble child becomes so long as the robust are not tired. He must keep pace with the rest. The jaded, nervous system cries out in vain. His face looks pale and haggard. Yawn follows yawn; his head may droop and his eyes

may close from sheer exhaustion; but the goad is applied, and he must arouse himself, for there are more lessons to be recited. He is restless at night, and moans and talks in his sleep, often repeating portions of the lessons he had worried over during the day. His parents are pleased to know that he is so thoroughly absorbed in his studies. If they could realize the truth they would know that he is consuming his brain capital instead of his brain income. Is it strange that headache and nervous prostration and insomnia, and St. Vitus dance, and epilepsy, and even utter extinction of mind should result from such inhuman and senseless abuse? In response to an inquiry on this subject, addressed to a number of my medical friends, the concensus of opinion was that the pupils in our public schools are overworked, and numerous instances were cited in which the victims suffered serious impairment of health in consequence thereof. For instance, a little girl nine years of age was brought to a physician for advice and treatment. She was pale, thin and very nervous, and had constant headache. The muscles of her face twitched constantly, and she could scarcely keep her feet and hands still. She was in the incipient stage of chorea or St. Vitus dance. In answer to the question as to the number of studies she was pursuing at school, the fact was elicited that her daily task consisted of eight studies—spelling, reading, history, arithmetic, geography, language, physiology and drawing. Deducting the time she ought to have slept, and the time required for her meals and toilet, and going and coming from school, and the time occupied in her recitations, she had about six hours left to study eight branches of learning. Now suppose either one of you ladies or gentlemen, who have mature brains and trained and experienced minds, should try to study eight unfamiliar subjects of knowledge in six hours, and were compelled to do this five days in the week, and then forsooth be expected to turn out cheerful and bright with a well-prepared Sunday-school lesson on Sunday morning. I think you would soon be in the most abject state of mental confusion. You simply could not perform the task.

In addition to the multiplicity of studies, we cannot overlook the enormous, absurd and unreasonable character of the questions that the pupils are often required to answer in their respective branches of study. To illustrate, the following are examples of questions taken from the lessons of children from eight to ten years of age:

1. Spell and define forty words taken from Webster's dictionary.

2. Write the names of all the bones in the human body, spelling them correctly.

3. Bound the United States and give the names of all the States in the Union; bound Ohio and name all the counties; bound this county and name the townships; bound the township you live in and give the number of school districts in the township.

While investigating this subject, I asked a little girl how far her class was advanced in physiology. She replied they "had studied the bones and would soon finish the joints." Rather a grewsome study for little girls, indeed! What good they will ever derive from a little smattering of anatomy goes beyond my comprehension, unless it would be to prepare them to give testimony in a Luetgert trial at Chicago. How much more useful and practical it would be to teach them the anatomy of fowls and have them learn how to carve them!

One of the greatest mistakes in our present system of educating children is that they are given too many subjects to study at once. The power of dissociation—that is, of keeping one subject entirely clear of another subject—is not great in the minds of children. The result is, that when they are through with their daily tasks they have a mass of confused ideas which it is difficult and sometimes impossible to separate one from the other. The instances are extremely exceptional in which a child can concentrate its mind on eight or ten different subjects in one day, and if it attempts to do so the brain is liable to be injured by the effort. It is a difficult matter even for adults to form and maintain clear ideas of several subjects at once. For this reason it has been found advantageous to extend the time of study, and reduce the number of branches which students were obliged to study simultaneously in our medical colleges. Experienced medical teachers recognized the evil results of trying to make doctors by the forcing process, and no doubt the quality of the future product will confirm the wisdom of the change.

The education of many of our eminent men was obtained at the village school where they learned but little more than the three R's, but they learned those well. As a rule, they were well-grown children before they entered school, and were in robust health, their physical forces not being deteriorated by want of bodily exercise.

They obtained a thorough knowledge of the branches taught, not because of any superiority of brains over the children of the present day, but because their minds were not tortured with numerous subjects to be learned, and they were not goaded by the system of emulation and competition which prevails in all of our schools at present. It is the history of many of our greatest scholars that they had reached the maturer years of youth before they made rapid progress in their studies. When they arrived at the age at which their predilictions were formed, they knew exactly what they wanted to learn, and they entered with ardor upon the course of study they had selected for themselves. Many of them were obliged to labor for their own support, but they devoted every moment they could spare from their labors to their studies, and often consumed the midnight candle in the pursuit of knowledge. One hour of this kind of mental work with a brain near its full development is worth more than days of forced application at the tender age when the brain needs all its force for natural growth, and consequently mental effort soon becomes confusing and painful.

Another great fault with our method of education is that there is too much learning by rote, without there being any understanding of the subject studied. This is notable the case in the study of grammar. Professor W. A. Hammond, a well-known author on nervous diseases, says: "Grammar should be banished from all schools, except perhaps from the senior year of a university course. No child ever learned to speak good English from studying grammar. It has driven many a poor little wretch into headaches and nervous troubles. It is the most ingenius device for forcing an immature brain into early decreptitude that the cunning of man has yet devised. The only reason why it does not do more harm is that not one in ten of the pupils that come out of our schools know anything about it."

The chief object with the majority of branches taught seems to be to develop the memory at the expense of the other mental faculties. Now psychologists tell us that the memory is one of the lowest faculties of the mind, in fact it is not a faculty, but simply the result of the registration of impressions. It is the property of certain parts of the brain substance, and is sometimes found to exist in the highest form in persons of low intelligence, being exerted automatically, as it were, without reason. When we analyze the faculties of the mind and consider mental opera-

tions from a scientific or psychological standpoint, it becomes manifest that if the perceptions and the power of mental concentration are cultivated the memory will take care of itself. The brain of the child is immature, especially in the portion concerned in the elaboration of the higher qualities of the mind. His mental powers are almost entirely limited to that portion of the brain which has direct relation with the organs of especial senses. His ideas are all evolved from his perceptions, and the exercise of the perceptions is purely physiological and is conducive to healthy cerebral development. A careful observation and study of the child from the early days of infancy to advanced childhood, teaches us nature's methods in the process of mental evolution. When the child is born the brain is only so far developed as to be the seat of an impulse to obtain nourishment. By and by consciousness appears, the child begins to hear, feel and see. From this time forth the infant is in constant pursuit of knowledge. He looks at every object with inquiring eyes and, if possible, takes them into his hands so that he can get fuller ideas of them. The first faculties of his mind that are brought into action are the perceptions or senses, the special organs of which are the eye, the ear, the nose, the tongue and the skin. During the early years of infancy and childhood development of brain goes on rapidly. This development, it must be remembered, is not a mere growth, but a constant unfolding of latent powers, a continual progress into a higher and higher life. Any undue strain or worry, or any condition which interferes with the proper nutrition of the brain during this period of life, will arrest its growth and development and must necessarily impair its future usefulness. It is, therefore, evident that the laws of mental hygiene would demand that the child's education should be almost exclusively conducted through the perceptions for the first ten or twelve years of life. He should be taught to acquire knowledge through the use of his senses. His power of attention should not be worried by set lessons. His understanding should not be unduly spurred, nor should his memory be taxed. He ought to see some tangible result of his effort to acquire knowledge, and this can only be done by teaching him facts that he understands and recognizes to be facts. Montaigne says: "Too much learning stifles the soul just as plants are stifled by too much moisture and lamps by too much oil; for pedants plunder knowledge from books and carry it on the tip of their lips just as birds carry seeds wherewith

to feed their young. The care and expense that we received from our parents in our education go for nothing but to furnish our heads with knowledge, but gives us nothing of judgment or virtue. We labor only to stuff the memory, but leave the conscience and understanding empty and unfurnished."

A brief consideration of the structure and histological elements of the brain substance becomes necessary, in order to understand the manner in which the brain is injured by excessive mental application. The brain is merely a mass of protoplasm in the highest degree peculiar and, as scientists say, specialized; i. e., set apart for a special function or office. Protoplasm is composed of ultimate compound particles called molecules, each molecule being composed of a definite number of atoms. All protoplasm dies in its own action. When one of its molecules has performed its life act it dies, but the protoplasmic mass does not die. It does not even waste, because when a molecule dies the remaining molecules immediately set to work to take away the dead matter and to form a new living particle in the mould left by its removal. Now, it is plain how mental labor affects the brain. The production of every thought causes the death of a number of protoplasmic molecules. If the brain is in a normal condition the waste matter is removed, and the molecules are replaced by the process of nutrition as fast as they are destroyed. If, however, thought follows thought with such rapidity that no time is allowed for the reproduction of the protoplasmic molecules which have been destroyed by continuous mental effort, a deficiency is created—the new working units which are built up will not equal the number destroyed. Nature gives ample warning that labor must be desisted from long before such a condition is reached. A profound sense of weariness is the signal that the brain imperatively needs rest. If not too much work has been done during the day, and the process of destruction has not gone too far, a reconstruction of all that was destroyed will take place during the night's sleep, and the brain will be as fresh and perfect as it was before.

If, however, the work has been a little too severe, or the period of recuperation a little too short, the brain does not quite recoup itself and in the morning is a little less capable of effort. The loss may be so slight as not to be perceptible, but "it is the many mickles which make the muckles." Suppose there is a deficiency each day, and the process goes on for months and years? The result will be that eventually there will not be enough molecules left

for labor, and a nervous breakdown ensues, with perhaps scarcely enough working units left to rebuild the mental machine. In the light of this knowledge it is not difficult to understand why cases of nervous exhaustion recover so slowly. A brain which is merely tired may have the power of forming a million atoms in a night, while a brain which has been consuming the capital can perhaps only replace fifty atoms in the same time, so that years are required to replace its wasted tissue. Worse than this, the molecules which are produced by an exhausted brain are of a poor quality, hence it is that a brain which has been thoroughly used up will never recover its pristine power.

A clear understanding of the structural changes which take place in the brain substance as a result of mental operations enables us to comprehend how a nervous breakdown can and often does take place in our brighter scholars. The precocious youth who is the pride of his parents, envied by his fellows and lauded by his friends, and for whom everybody predicts a great future, often turns out a mediocre in after years or even an absolute failure in life's struggle. There is no doubt but that in many of those instances the brain has been arrested in its development, and its molecular reproductive force has been exhausted by overwork. The injury thus wrought in the young brain by excessive study may not be apparent at the time, but it is none the less real. There have been numerous instances in which the brain of the studious child has developed rapidly up to a certain age and then suddenly ceased to expand. This is a mushroom growth brought about by the stimulus of study, and it is quite reasonable that its structure must be inferior in quality. In this class of cases the energies which should have been spent in normal development have been diverted to the needs of labor, and the brain has spent all its developmental force, so that instead of increasing in functional ability it is barely able to maintain its existence, and will always be a dwarfed and damaged brain.

It must be remembered that the brain not only furnishes force for thought and the other elements of the mind, but it is also the centre of the nervous system, which keeps in action all the other organs of the body. If, therefore, the mind takes more than its share of nerve force, the heart, the stomach, the lungs, the muscles and the entire physical organization must suffer. Modern science is revealing more and more clearly that many affections of the different organs of the body are dependent on disordered nervous

action. Many of the disorders of digestion and assimilation and the various diseases resulting from impaired nutrition are referable to this cause. We do not know how far pneumonia and other acute and chronic diseases have their origin in nerve exhaustion, but there seems to be a close connection betweeen them. This is the most important problem that enters into the consideration of this subject. Whether we speak of the mental or of the physical, the years of school life constitute the most important period of our lives. There is no doubt but that excessive mental application, as well as all other gross violations of the laws of health, will bear fruit in after years in the form of disease which entails life-long misery or premature death. We have no means of knowing how many sufferers of this kind exist in every community. Many of the most distressing nervous disease do not produce death, but after years of miserable existence the victim perishes of some disease that is not known to be nervous. Hence we can form no estimate of the number thus afflicted from mortality records. The history of epilepsy is often that of a slow progressive failure of mental power until the unfortunate boy or girl disappears in the gloom of the idiotic asylum, finally to die of pneumonia or a fever. Often again, and these are the saddest of all cases, the mental warp is not sufficient for the asylum, but is enough to render miserable the life of the individual and to blast the happiness of the home circle. "Death is but one act in the drama of life, than which the living death, the perpetual torture of a nervous disease, is far worse."

One of the most potent factors in producing brain exhaustion in the scholars of our public schools is the emulation and competition which is so commonly in vogue. The artificial stimulation which is induced by monthly examinations, the result of which is expressed in a graded report to the parents, is in many instances injurious in the highest degree. What the brightest scholar can accomplish becomes the standard for the rest. The anxiety and worry and mental strain attending such a system does more harm to the immature brain in one month than a whole year of study without such emotional disturbance. Who has not seen the little ones crying over their reports as though their hearts would break, because their grades were lower than the previous month, and because, in their opinion, they had been unjustly dealt with? The most unfortunate feature in the matter is that the pressure falls the most heavily upon the anxious, earnest, ambitious and sensitive

children, just the ones who would do all they ought without such stimulation.

The most reprehensible practice of all—which is in vogue in many schools—is that of deducting a certain per cent. from the child's grades for absence from any cause, sickness not excepted. The result is that children frequently hide their illness as long as possible, and when they are compelled to remain at home by order of the physician the disappointment and grief depresses their nervous system and militates against their recovery. I have known outbreaks of diphtheria to occur in schools as a result of children persisting in attending when they were afflicted with the disease, and the only reason for concealing their illness was that they could not bear to fall short in their grades. Punishment for sickness, ye gods! Who can conceive a more infamous, diabolical rule of discipline than this? A heathen despot, in his most tyrannical mood, could not devise a more cruel and inhuman regulation. The Americans are proverbially a nation of neurotics, and it is not surprising that we have gained the opprobrium when we have permitted a system of education which ruins the child's nervous system while at school. How can we expect a development into perfect manhood and womanhood in after years? The time will probably come when the people will realize that our system of education is faulty in the extreme, and will take steps toward placing it on a basis of good common sense. The light of intelligence is pervading all the affairs of mankind, and is dispelling ignorance, superstition and bigotry. Is it not strange that the great scheme of education has so far escaped, and that the college course of to-day consists of a curriculum which was originally devised for priests, and was their necessary training in the twelfth and thirteenth centuries.

It is a question, however, whether the reform will be effected in our day and generation. The fault lies almost wholly with the parents. They want the worth of their money. They demand the "pound of flesh," and educators are merely furnishing what the public demands. The vast majority of parents aid in the forcing process. As soon as the children return from school they are urged and often compelled to apply themselves to their studies until late at night, and the early morn finds them bending over their books. Little regard is had for either their physical or mental welfare, just so they stand well in their classes.

It is generally admitted that the highest results of the educa-

tional process is to be sought in the direction of a sound mind in a sound body. But the question is, Are the two compatible? Can they be united in the same person? Is it possible to possess both, or must one be sacrificed ere the other can be reached? Can we have the highest mental culture conjoined with the most perfect physical development? "Is it necessary to the highest mental development that it be accompanied by hollow eyes, sunken chests, weakened nerves, and miserable state generally that we sometimes see in those who have attained intellectual greatness?" Must the mind devour the body ere it can reach the fullest and broadest range of its powers? Are the fires of genius to reach their greatest brightness only as they are fed by the health and life of those in whom they burn so brightly? To these questions I believe a negative answer can be given, and that body and mind--the mental and physical educated—trained, developed aright, can grow up into the noblest type of perfect manhood.

SANITARY CONDITIONS OF SCHOOLHOUSES.

ABSTRACT OF REPORT OF VISITING COMMITTEE OF THE BUFFALO SCHOOL ASSOCIATION, MARCH 19, 1898.

This Association is an organization of public spirited citizens, whose aims is to improve existing conditions in the grammar school buildings. Their conclusions should have great weight in the community.

In judging the sanitary condition of the school buildings the committee has necessarily been guided by a standard. By standard is here meant, not the ideal building with the best modern equipments, but a building that is sufficiently well constructed and equipped to avoid condemnation in any important respect. Many of the necessities in such a building are evident to any person. Some of them are especially worthy of mention, and are here given.

1. The school site should be at least as high as the surrounding ground and well underdrained. Sufficient space should be allowed to secure a reasonably large playground, and an abundance of light, air, sunshine, and freedom from noise from neighboring buildings. This space should not be less than 40 feet on each side.

2. The closets should be in separate buildings, or so shut off from other parts of the school building as to avoid any contamination of the air in the latter. They should be well ventilated; the floors should be of non-absorbent material; they should not be made of wood. The seats should be invariably separated from one another for the sake of privacy. No towels should be kept for promiscuous use, although some should be kept for use by individual children in cases of emergency.

3. Heating. Where hot-air furnaces are used, provision should be made for the evaporation of water, and the apparatus provided for that purpose should be used. The air should be brought from out of doors. Heating by stoves is objectionable. Maintenance of the proper temperature should rest upon one person—the janitor, under the supervision of the principal.

4. The system of ventilation adopted in each building should work, and should be used. The shaft intended for the exit of foul air should lead above the roof. Over each air-inlet and outlet there should be hung light ribbons to show the movement of the air current.

5. Three-story buildings that are not provided with ample halls and stairways properly distributed through the building should be furnished with fire escapes.

6. The number of cubic feet of air space for each pupil should be 250. At least a few adjustable seats should be furnished to each room for the health and comfort of those who vary from the normal size.

7. Light should enter the rooms at the left and in the rear of the pupils. There should be an abundance of light, not only for the eyes of the pupils, but for the general wholesomeness of the building. Dim light and dark shadows are not friendly to cleanliness and health. No blackboards should be placed between windows. Thermometers should be furnished to all rooms. These should be hung in the centre of the room about five feet from the floor, and should register 68 degrees.

8. For school room walls, either kalsomine or paint is preferable to wall-paper.

That many of the school buildings in this city are in an unsatisfactory condition was shown very clearly in the recent discussion in regard to School No. 16. A leading member of the school committee stated then that there were 15 or 16 other districts in which the people were also extremely dissatisfied with

their schoolhouses, and to comply with their wishes would probably cost about a million dollars. This is the clearest possible commentary on our school buildings.

THE ANNEXES.

The annexes fall into three distinct classes: (1) Those known as the old buildings, (2) the frame buildings owned by the city, and (3) the rented annexes. Of the 25 now occupied, the city owns 14. Of these 14, three, belonging respectively to Schools Nos. 18, 24 and 32, are old school buildings, built, all of them, before 1860. The one belonging to School 18 dates as far back as 1848. These are brick buildings, with an assembly room on each floor, and smaller recitation rooms at the rear. Two have no cellar, but simply a ventilated air-space underneath, and the third has a low basement used for coal.

All three of these buildings depend for heat upon stoves alone.

Two depend entirely upon window ventilation. At the third, No. 32, there are ventilating shafts, but as the examiner reports that "the ventilating system was not visible, and the janitor did not understand it," it is a fair inference that the main dependence for fresh air in this building also is on the open windows. At No. 24, the odor from the outhouse of the annex, which is but 14 feet away, often obliges the windows on that side of the building to be kept closed.

Defective as these buildings are, they are, with one exception, by far the best of the annexes. That exception is one of the second-class (frame buildings owned by the city), and is the two-story wooden building in the rear of No. 9. The others of this group are those known as the "pasteboard" annexes, and belong to Schools Nos. 3, 4, 18, 19, 24, 31, 33, 41, 42, 43 and 44—eleven in all.

The annexes of the third class—the rented buildings—offer more superficial variety, but in essentials they are very much alike, and in no case are they adapted to the use to which they are put. Last year the examiners of one rented building found 18 children huddled for recitation in a room 13½x9½ feet. The room had one window, 5x2 feet 4 inches, contained a stove and a sink and was hung with wraps. It opened into another cloak-room, was within two and one-half feet of a neglected stable and within ten feet of the outhouse belonging to the annex. The room was so crowded that children were in contact with the window and the fender of the stove. The condition of this room on a winter day, with wet wraps on the wall and the stove doing its best, may be imagined.

A hall in another rented annex, with a floor space of 10x23 feet, and 12 feet in height, was used both as cloak-room and recitation room also. At one end there was a door, at the other a window, both closed, and in this space were a large stove, a sink, a water-closet, the wraps of 100 children, and frequently a teacher and 38 pupils. This hall was between the two grade rooms.

SANITARIES.

The general condition of the sanitaries varies greatly; 28 are pronounced good; seven, bad; one, foul; seven, fair; seven have bad odors; four, imperfect flushing; five, no ventilating shafts (or practically none, for they do not work); two are imperfectly ventilated; one is good, but not large enough for the school; one, on third floor, has insufficient flushing; one does not expose plumbing; three have other defects; one has its cement floor sloping in the wrong direction.

VENTILATION.

The committee also regards the subject of ventilation as one of vital importance. The continued breathing of air laden with impurities, gaseous, organic and bacterial, is the cause of many diseases; and, what is at least equally important, is still more frequently the cause of lowered vitality, predisposing to more definite diseases. Headache, lethargy, mental dullness, various nervous disturbances, impoverished blood, and many other ailments are common results.

It is clear that the ventilation of the public schools needs a sweeping and thorough investigation and correction. It does not seem unreasonable to demand that the mass of elaborate and costly apparatus, with which our schools have been provided, be made to do the work for which it was designed. According to a report furnished by the Superintendent of Public Buildings, the fan system of heating and ventilating is found in 33 schools, including the two high schools. The total cost for the 33 schools is $241,303.64, an average of considerably over $7,000 for each school. And yet we find that in nine of these schools the ventilation is decidedly imperfect, and in eight others positively bad. These facts speak for themselves and require no comment.

Certainly no more money should be spent either in installing or remodeling systems that will not work.

DANGER FROM FIRE.

A grave responsibility rests upon the city of protecting the children at school against serious danger from fire. There is com-

paratively little risk from this source for those children who are confined to the first and second floors of the large school buildings. The danger arises in connection with the third floor of three-story buildings, and in the annexes. Out of the 61 large school buildings in the city, 30, or about half, have school rooms upon the third floor, and at present, approximately, 5,590 children occupy them daily. Three of these buildings, i. e., Nos. 6, 12 and 31, were found so extremely dangerous last spring that your Committee anticipated the present report by a detailed consideration of them before the Association at its May meeting. In consequence of this action, the authorities ordered fire escapes to be placed in Schools Nos. 6 and 31. School No. 12 has been torn down.

CONCLUSIONS.

In conclusion, the most sanitary needs of the schools, as shown in the foregoing report, may be summarized as follows:

1. School lots should be purchased of such a size as to protect the school against the loss of light, air and sunshine, and against the close proximity of neighbors detrimental to its value as school property. In this way, playgrounds would be furnished also. This provision has been neglected in connection with even the most recently built schools, erected in sections of the city where land is cheap.

2. Such appropriations for school buildings should be made as shall speedily abolish annexes, relieve the overcrowding in the schools and allow the normal amount of air space for each pupil. Twenty-five annexes are now in use; in fully one-half of the buildings rooms that were not intended for school rooms are so occupied, and in at least 17 buildings there are pupils without desks. Also, the air space per pupil is insufficient in a great majority of rooms in even the newer buildings.

3. Some arrangement which shall be hygienic and economical of space should be substituted for the present methods of disposing of the children's wraps.

4. Adjustable seats or their equivalent should be provided at once in every school. The lack of them indicts, daily, wanton injury on helpless children.

5. The plumbing of the schools should be put in sanitary condition and a systematic and adequate inspection of such plumbing should be provided. A signed and dated certificate of such inspection should hang in the janitor's room.

6. Such changes should be made in the lavatories as shall insure proper privacy there. Fifteen schools have no partitions between the seats in the lavatories. This is not the case in the older schools alone, but in such recent ones as Nos. 39, 1, 48 and 49. Also, some of the recently constructed closets have floors of wood.

7. Towels should be furnished for general use.

8. Furnace boilers in the schools should be inspected at least once a year, and the signed and dated report, giving result of such inspection, should hang in the janitor's room.

9. There should be a thorough examination, as soon as possible, by experts, of the air of the class rooms.

10. Further investigations of methods of school ventilation should be made and the efficiency of the ventilating apparatus now used in our schools be tested by experts. Heating and ventilating apparatus has been placed in 56 schools, at a probable cost of much more than $300,000. It secures good ventilation in not more than 20 of these schools, and in many of them it accomplishes practically nothing in this direction.

11. School rooms which are deficient in natural light on bright days should be abandoned, and a sufficient supply of artificial light should be furnished those liable to be dark at times.

12. Desks should be so arranged that the light comes from the proper quarter, and shades should be furnished these rooms in which the light is too strong.

13. Fire drill should be practised regularly and frequently in the schools, and those buildings where the children are shown to be in danger from fire should be made safe for their occupancy.

Thirty of the school buildings of the city have school rooms on the third floor, yet a majority of these schools are without fire-escapes, and there is no established rule in regard to fire drill.

14. There should be a thermometer in every room; there should be a definite understanding as to what it should register; and some one person should bear the responsibility for the proper temperature throughout any one building.

The fact that so many recommendations so vital in character have to be made shows that a large number of the public schools of Buffalo are a menace to the health of their pupils. Nevertheless, in accordance with the compulsory school law of the State, thousands of children are forced to attend them.

Your committee asks that the facts that it has here laid before

you receive such attention as will lead to an adequate and permanent improvement in the sanitary condition of the schools.

Signed by the Visiting Committee:

F. M. McMurray, Ph. D., Chairman of Committee, No. 322 West Utica Street.

Henry A. Richmond, President of Buffalo School Association, No. 348 Delaware Avenue.

T. M. Crowe, M. D., No. 183 Elk Street.

Mrs. Lucien Howe, No. 183 Delaware Avenue.

Mrs. Charles Kennedy, No. 183 Jewett Avenue.

Mrs. Maria Love, No. 184 Delaware Avenue.

J. N. Larned, No. 35 Johnson's Park.

Mrs. Herman Mynter, No. 566 Delaware Avenue.

Mrs. John S. Noyes, No. 127 Linwood Avenue.

Delb. H. Sherman, M. D., No. 660 Main Street.

Mrs. Lily Lord Tifft, No. 228 Linwood Avenue.

P. W. Van Peyma, M. D., No. 445 William Street.

MORTALITY OF PLUMBERS.—The "Plumber and Decorator," in analyzing a recent report of the Registrar-General, in which the mortality among certain trades during the years 1890, '91, and '92 is tabulated, has found out that the comparative mortality figure for plumbers at 26-65 years of age—the main working period of life—is 1,120, as compared with 1,000 for all males. From lead poisoning these workers suffer severely, the deaths which are definitely returned under this head giving the high mortality figure of 19. It is true that this is small when compared with the enormous mortality of lead workers and file makers from the same cause, but the two latter are the only occupations in which the mortality from this disease exceeds that of plumbers, painters and glaziers. Separate examination of the returns relating to plumbers on the one hand and to painters and glaziers on the other shows very little difference in the liability of these workers to lead poisoning, the difference, such as it is, being slightly unfavorable to plumbers. Many of the workers, however, follow both occupations. Lead poisoning is probably the primary cause of the excessive mortality from gout and from diseases of the nervous and urinary systems. From phthisis, cancer, bronchitis, and Bright's disease, the death-rate of plumbers is in excess of the average.—Sanitary Plumber.

THE MEDALS, JETONS, AND TOKENS ILLUSTRATIVE OF SANITATION.

By Dr. H. R. Storer, Newport, R. I.

SUPPLEMENT V.*

II. Water Supply.

France.

Michel Eugene Chevreul (1786-1889), of Paris.

Besides No. 1704, there are:

(1705.) Obverse, bust, to right. At side: O. Roty. Inscription: Michel Evgene Chevrevl Membre De L'Academie Des Sciences Reverse. Chevreul, seated to left with pen and paper, is offered a wreath by a girl. Below his chair, books and a scroll inscribed: Corps Gras | Contraste Simultane | Des Couleurs |—| Chemie Appliquee | A La Teinture |—| Vision Des Couleurs |— In background a table with chemical apparatus. Beneath: O. Roty. Inscription: La Jevnesse Française Au Doyen Des Etudiants | 31 Aovt 1786. 31 Aovt 1886. Bronze. 44.69mm. Struck. Revue belge de num., 1889, p. 217; Weber, Num. Chronicle, 1894, p. 118, and 1895, p. 314; *Ibid.*, English Medals by Foreign Artists, p. 68. Upon Chevreul's hundredth birthday. Struck by the State Direction des Beaux Arts. In the Harvard University, Weber, and Brettauer collections.

2410. As preceding, but larger. Bronze. 63.99mm. Cast. In Metropolitan Art Museum Collection.

(1706.) Obverse. Bust, to left. Beneath chin: Ringel D'Illzach | MDCCCLXXV Inscription, to left: Contraste . Simultane . Des . Couleurs . | . Cercles . Chromatiques | . Pirouettes . Complementaires. To right: . Corps . Gras . D'Origine . Animale . Below: Michel . Evgene . Chevreul . (upon a band) | . Angers. XXXI . Aovt . MDCCLXXXVI.* Reverse blank. Bronze. 111.175mm. Cast. Rouan, Medaillons Contemporains, fig.; Weber, Num. Chronicle, 1895, p. 314; Magazine of Art, VIII, 1885, p. 387. In the Weber collection.

*Continued from page 331.

2411. Obverse. Head, to left. Beneath: David 1834 Reverse blank, save signature of the bronze founder, L. Richard, retrograde. Bronze. 98.155mm. Cast. Jouin, *loc. cit.*, p. 255, No. 674; Weber, *loc. cit.*, p. 68; *Ibid.*, Num. Chronicle, 1895, p. 315. In the Weber collection.

There are also the following:

Cambrai.

2412. 1864. Inauguration Des Eaux. Bronze. 23.35mm. Baer Cat., Jan., 1898, No. 113.

Rheims.

2413. Jean Godinot. Restoration of the Water Service. 1843. By Dubois. Bronze. 50mm. Stroehlin Cat., 28 Oct., 1897, No. 930.

ITALY.

(129.) I have been unable hitherto to give the description of this medal. Obverse. View of bridge. Inscr.: Gregorius XVI (etc.) Reverse. A cascade. Inscr.: Tibertes Catillo Perforato Inducto Ariene Servato Anno Domini MDCCCXXV. Bronze. 48.75mm. Ratto Cat., Genoa, 1895, No. 1358.

2414. 1843. Gregory XVI. Reverse. The Aqueduct Gallori. Silver. Baer Cat., Paris, Jan., 1897, No. 975.

III. BATHING.

SOUTH AMERICA.

Argentine Republic.

Buenos Ayres.

2415. Public baths. 1889. Bronze. 24.38mm. Baer Cat., Paris, Jan., 1897, No. 1220.

THE UNITED STATES.

See under Hospitals, Texas.

ENGLAND.

Dudley, Worcestershire.

2416. Obverse. Within circle: Dudley Inscription: Corporation Baths. Reverse. 3d Copper. Rim milled. Batty, *loc. cit.*, I, p. 290, No. 2775a.

BELGIUM.

2417. Obverse. A rural bathing place. Reverse. An open stream, with two bathers. Legend: Natation Below, at right: Fernan Du Bois Enamel (22), silver (32), bronze (17). Quadrangular. 22x34mm. De Witte, Med. Hist. de Belgique, p. 59, pl. XVI, No. 30.

GERMANY.

Rügen, Pomerania.

2418. Obverse. Head, to right. Beneath, L. Inscr.: *Wilhelm II Deutscher Kaiser Konig Von Preussen * Reverse as that of No. 2162. Brass. 14.21mm. Edges milled. In my collection.

AUSTRIA.

Firchau.

2419. Obverse. Between upright dolphins, female head to left. Inscr.: Gesellschaft Für Bad Kunst Und Sport Exergue : upon an ornate label: Arethusa Reverse. A charioteer driving four horses, to left. Above, a Victory, with garland. Exergue: above crossed laurel branches, an owl flying, lyre and palette. Bronze. 28.43mm. Unger Cat., Vienna, 26 April, 1897, No. 1069. In my collection.

IV. MINERAL SPRINGS.

CANADA.

Coxton Spring.

2420. Obverse. R. W. Williams | — . — | Propr. | — . — | Three Rivers | P. Q. (Province of Quebec.) Reverse. Good For | 1 | -Glass- Original | Coxton Water Brass. 15.24mm. McLachlan, *loc. cit.*, p. 63, No. 53; Breton, p. 82, No. 615, fig.; Storer, *loc. cit.*, July, 1893, No. 620.

St. Leon Spring.

Besides Nos. 1721-3, there are the following.

2421. Similar to No. 1723, save in field of obverse a maple leaf instead of a crown. Brass. 12.18mm. Edges beaded. McLachlan, Canadian Ant. and Num. Journal, April, 1893, p. 65, No. 70; Breton, p. 82, No. 617, fig.; Storer, *loc. cit.*, Oct., 1892, No. 472. In the Oettinger Collection.

2422. Similar to No. 1721, save that date on reverse is 1892, and that a central star instead of dot is on the break between the lines. Aluminum. Brass. 14.21mm. McLachlan, *loc. cit.*, p. 63, No. 52; Breton, p. 83, No. 619, fig.; Storer, *loc. cit.*, July, 1893, No. 619.

2423. Obverse. St. Leon Water | Is A | Sure Cure | For | Dyspepsia | And | (scroll) Kidney Troubles (scroll) |—| H. E. La Force | Sole Agent | 3 Port Dauphin St. | * | (scroll) Quebec (scroll). Reverse. A mirror. Plated shell with card. 30.45mm. *Ibid.*, July, 1896, No. 1006. In my collection.

MEXICO.

2424. Obverse. Within field: L. Emilio | Lafon | Farmaceutico Inscr.: Botica Del Aquila | Chihuahua Reverse. Buena Por | Un Vaso De | Agua Gaseosa | 12 Por $1 — Brass. 18.28 mm. Edges beaded. Storer, *loc. cit.*, April, 1895, No. 818. In my collection, the gift of the late Dr. J. W. Bastow, of Guadalajara (Jalisco).

THE UNITED STATES.

2425. Obverse. D. G. Farwell 17 Court St, Brooklyn. Reverse. A mortar. Inscr.: Soda Water. 14.22mm. *Ibid.*, April, 1896, No. 973.

2426. Obverse. Lane & Paine Druggists Rochester, N. Y. Reverse. Soda Water. 14.22mm. *Ibid.*, April, 1896, No. 977.

2427. Obverse. The Best | Soda Water, | Drugs, | And | Perfumes, At Petty's Reverse. 200 20.32mm. *Ibid.*, Jan., 1897, No. 1089.

See also under France, Vichy.

ENGLAND.

Dr. Anthony Fothergill (1735-1873), of London.

Besides No. 162, there are:

2428. Obverse. Similar to No. 162, save that exergue of obverse is vacant, and engraver's name is absent from reverse. Bronze, white metal. 28.44mm. Storer, *loc. cit.*, April, 1894, No. 724. In my collection.

2429. Obverse as that of No. 162. Reverse as that, save that engraver's name is absent. It resembles the reverse of the Queen Charlotte medal of the Medical Society of London, except in this respect, and that both the altar and serpent are much larger. Bronze. 28.44mm. *Ibid.*, Jan., 1896, No. 939. In the Government collection.

See also Section XI, Mil. and Naval Hygiene (Royal Humane Society).

Dr. Hermann Weber (1823—), of London.

The Spas and Mineral waters of Europe (with his son, Dr. Fred. Parkes Weber), London, 1896. See subsequently, under Epidemics, Phthisis.

There are the following tokens:

Bermondsey, Surrey.

2430. Obverse. II (between two keys), Spa-Garden. Bermondsey. Reverse. Two clarionets and a French horn, with a

flaming heart in the centre. 1797. Upon rim: Skidmore Holborn London Conder, p. 148, No. 12; Atkins, p. 193, No. 8.

2431. Obverse. I (keys) | Bermondsey | Spa | Garden . | 1786. Reverse as preceding. Conder, p. 148, No. 13; Atkins, p. 193, No. 9.

2432. Obverse as that of last but one. Reverse as obverse of last. Atkins, p. 193, No. 10.

Cheltenham, Gloucestershire.

Besides No. 237, there is:

2433. Obverse. Hygeia, to right, sacrificing at an altar and feeding serpent from a patera resting on a shaft, from which hangs a medallion of the king. At its side, a young oak tree. Inscr.: Georgio III Optimo Principi. Exergue: 1789 Reverse. An open door, with faucet at side. Inscription: Ob Salutem - Restauratam. Exergue: S. Morreau | Arbit: Eleg. | Cheltenham | Excud. Cur | 1788 Silver. 28.42mm. Edges beaded. Storer, *loc. cit.*, July, 1897, No. 1152. In my collection.

Malvern, Worcestershire.

Besides No. 2171, there is:

2434. Obverse. The royal arms. Reverse, within field: $\frac{1D}{2}$. Inscription: The Royal Malvern Well Spa, Malvern. Brass. 14.22mm. In the Government collection.

FRANCE.

Salines. (St. Nicolas Varangéville.)

Besides Nos. 245-7, and 2172-4, there are:

2435. Obverse. Bust of Louis XVIII. 1814. Silver. Octagonal. Florange, Cat. 7, No. 766 bis.

2436. As preceding, but without date. Silver. Octagonal. *Ibid.*, No. 766 bis.[1]

2437. As preceding, without date, but Ministère De Duc De Gaeta Silver. *Ibid.*, No. 767.

2438. Without date, but struck in 1854. Silver. Rectangular. *Ibid.*, No. 768.

2439. Obverse. (J. - M. de Grimaldi, 1859.) Reverse. xxx 6 Juin 1858, Inauguration Des Bains De Salins. Bronze. 48.75 mm. Baer Cat., Jan., 1898, No. 115.

Vichy.

Besides Nos. 248, and 1737-8, there are:

2440. Obverse. Upon a band with scrolled tips: Property Of The French State | Watering Establishment | Of | Vichy |—| Sources | * Célestins * | * Grande Grille * Hôpital (in script). Re-

verse. Upon enclosed card: * Natural Mineral Waters * | Of Vichy | France | - . - | State Springs | Célestins | Grande Grille (in script). Hôpital | - . - | Sole Agents (in script) | New York | - . - | 152-154, Franklin Street | Eisner And Mendelson Co. Silvered shell. 24.38mm. In my collection.

2441. Obverse. Head of Æsculapius, to right, with his staff over right shoulder. No inscription. Reverse. Within oak branches tied below, with rosette above: Cie Des Eaux | Thermales | De Vichy Silver. Octagonal. 22.34mm. In my collection.

GERMANY.

Baron Dr. Justus von Liebig (1803-72), of Munich.

Besides Nos. 1719-20, there are:

2442. Obverse. Bust, to right. Beneath: David 1837. Inscription: Just Liebig Reverse blank, save signature of the bronze founder, L. Richard of Paris. Bronze. 74.118mm. Cast. Jouin, *loc. cit.*, p. 225, No. 246. In the Weber collection.

2443. Obverse. Bust of Liebig, to left. Reverse, Pallas, seated, to left, with laurel wreath and book. At left, Ceres erect, with sheaf of grain. Inscription: Für Verdienste Um Die Landwirthschaft. Exergue: 1870 Bronze. 70mm. By Brehmer. Rappaport, Num. Offerten-Blatt, Jan., 1898, No. 3492.

I have in my collection an Alexandrinenbad token, about which I am in doubt. I shall enter it under Austria, as it is evidently not of Alexandersbad in the Fichtelgebirge, Bavaria.

Alexisbad, in the Selkethal, Anhalt-Bernberg.

2444. Obverse. View of the locality. Exergue: Alexisbad. Reverse. Within crossed branches: Andenken | An Das | Selkethal Exergue: Aus Mägdesprunger Hohofen gegossen 36.58 mm. I have impressions from Dr. Brettauer of Trieste.

Berchtesgaden, Bavaria.

2445. Obverse. Head of Max Joseph, to right. Reverse. Recumbent female. In background, the "Watzmann." I. A. Inscription: Aquæ Salsæ Ductu (etc.) Silver. 32.50mm. Cahn Cat., 10, 1890, No. 1328.

Dobberan, Mechlenburg-Schwerin.

2446. Obverse. The bath-house. Inscription: Balinevm Dobberanense Conditvm. Reverse. Obelisk. Tin. 21.33mm. Struck in 1793. Evers, *loc. cit.*, p. 211; Cahn Cat., 11, 1891, No. 2036.

Juliushalle (Harz Mts.)

2447-8. Tokens of the Salt Works for ¼ and ½ baskets (korb). Hess Cat., 5 May, 1895, No. 8449.

Reichenhall, Bavaria.

2449. Obverse. Bust of Johann Sebastian Clais. (By Jos. Scheuffel.) Reverse. The Salt Works, 1782. Silver. Merzbacher Cat., 1883, No. 240.

2450. Obverse. Within laurel branches, the civic arms; a crowned armorial shield. Reverse. View of the village. Inscription: Bad Reichenhall Gilt bronze. 17.26mm. In my collection.

Travemunde, Prussia.

2451. Obverse. Within a circle: Travemunde Below: 5 with a star. Reverse: K Brass. Rhomboidal. 13.20mm.

There are also others similar, of different shapes, and with the numerals 10, 20, 50, 100, 200, and 500. They are Kur-haus marken. I have them all.

SWITZERLAND.

Baden, Canton Aargau.

2452. Similar to No. 275, save in exergue of reverse: Pax Badens. | 7. Sept. 1714. | V. Van Loon, Hist. Met., IV, p. 677, fig.

AUSTRIA.

2453. Obverse. Hygeia erect, between trees. At her sides reclining females, with flowing urns. Inscription, upon a band: Alexandrinen Bad Reverse, blank. Compressed leather. 23.35 mm. In my collection.

Baden, near Vienna.

2454. Obverse. The Spring buildings. Inscription: Heiliger Quell (etc.) Reverse. View of the Helenen Thal. Silver. 23.35 mm. By Lange. Montenuovo Cat., Parts 9-14, No. 3291.

Carlsbad, Bohemia.

Besides Nos. 259, 1749, and 2182-5, there is:

2455. Obverse. View of the city. Exergue: Entdeckung D. Karls | Bader Sprudl. | 1370 Reverse. Süsses Leben (etc.), as on reverse of No. 268. Silver, copper, tin. Donebauer, *loc. cit.*, p. 793, No. 847.

Hunyadi, S. W. Transylvania.

2456. Obverse. Bust, nearly facing. Inscription: Saxlehner Andras Hunyadi János Forrasa. Reverse. Kirándulás | 1894 | 5 Sept. ján Inscription: VIII Nemzetk. Kösegészsegi Es Demografici Congressus. Bronze. 16.25mm. With ring, and red, white and green ribbon. Presented to the members of the Hy-

gienic Congress at Buda Pest in 1894, by Mr. Saxlehner, the proprietor of the Spring. In the Government collection.

Klampenberg.

2457. Obverse. Within a laurel wreath: Klampenberg, Bade-anstalt. Reverse ? Silver. Zschiesche & Köder Cat., 1886, No. 1514. Commemorative of the opening of the spring.

Rátz-Fürdo.

2458. Obverse. Within oak branches tied by ribbon: Rátz | Fürdo " Reverse. Within similar branches, also tied: Raitzen | Bad Silver. 12.20mm. Edges milled. In my collection.

Teplitz, Bohemia.

Besides Nos. 271-2, 1752, and 2187-91, there is:

2459. As No. 272, save on obverse 762, and on reverse 1862. Donebauer, Boehmische Privatmünzen, p. 835, No. 1064.

2460. Obverse. Flocks going to a mountain. Reverse. The baths. Legend: Frohe Erinnerung, Wider Geschenkter Genesung. Silver. 30.47mm. Wellenheim, 1459; Unger Cat., Vienna, 26 April, 1897, No. 3523.

The following belongs in this connection.

2461. Obverse. Bust to right. At sides: M.D—LIII Inscription: Jacobvs Comes A Monteforti Dominvs Bregentiae (Bregenz, Austrian Tyrol) Et Peggav (in Styria.) Reverse. Coat of arms. Inscription: Hvnc Medico In Thermas Comiti Comes Offero Nvmvm =| Cvi Mox A Reditv Fit Comes Alma Venvs ' Silver. 27.43mm. Unique.

I have impressions from Dr. Brettauer. It is to be regretted that the medal does not bear the name of the physician nor of the thermal springs thus lauded by a grateful patient.

ITALY.

Recoaro (near Vicenza).

2462. Obverse. The buildings. Inscription: Stabilimento Delle Fonte Minerali Exergue: a rosette between dots. Reverse. Memoria | Di Recoaro | Dio Ci Dia | La Salute Silver. 22.35mm. In the Wright collection and my own.

Rome.

2463. Obverse. Bust of Pius VII. A. VII. Reverse. Salinae Tarquin. Institutae. Bronze. 24.38mm. Thieme, Num. Verkehr, July, 1894, No. 2810.

2464. As preceding, but A. VIII. *Ibid.*, July, 1895, No. 2878.

DENMARK.

Copenhagen.

2465. Obverse. Between two bottles, a syphon flask. In-

scription: Mineralvands Arbeidernes | Fag Forening (Mineral Waters Trade Union) Reverse blank. Shield shaped. 17x19. 26x30mm. Bergsœe, Danske Med. og Jetons, p. 3, No. 28, pl. 1, fig. 2.

SWEDEN.

Dr. Jons Jakob Berzelius (1779-1848), of Stockholm.

Besides Nos. 166-72, there is:

2466. Obverse. Bust. Reverse. Batka Dedic: Selenium (discovered by B. in 1817), plaster. Oval. 20.31mm. Ernst, Monatsblatt der num. Gesellsch. in Wien, Feb., 1897, p. 14.

(To be Continued.)

EDITOR'S TABLE.

SANITARIAN, MAY NUMBER, 1898.

FORMALDEHYDE DISINFECTION.

The Air Should Be Dry.

Some recent experiments ("Medical Record," April 2,) by Dr. G. W. Goler, Health Officer of Rochester, throws much doubt on the efficiency of formaldehyde, as used in the laboratory of the Health Department of Rochester. He says:

"If cleaning is done in an infected house into which the practical work of disinfection is carried, and any nests of infection remain, there will necessarily be closely associated with these foci of infection a certain amount of moisture. Under such conditions formaldehyde disinfection has not been successful in our hands. On the other hand, if cleaning is not used before formaldehyde disinfection, there would necessarily be a large number of foci of infection to be destroyed. The action of formaldehyde in vapor must necessarily be very great, and its penetrating power far greater than has been proven by favorable experiments. Recent teaching based upon bacteriological studies has been that thorough cleaning with good soap and clean water intelligently applied is the best means for ridding premises of infectious material, and that after thorough cleaning disinfection should be used as a supplementary measure. From some of the experiments with for-

maldehyde, it would appear that, as formaldehyde operates best on dry media, cleaning should be dispensed with because of the necessary moisture.

"A series of five experiments has been conducted in the laboratory of the Rochester Health Department—four of them to determine the efficiency of formaldehyde in practice, the fifth to determine the efficiency of sulphur as compared with formaldehyde.

"Experiment 1.—Apparatus used according to directions in a room containing less than fourteen hundred cubic feet and having a considerable amount of laboratory furniture. Amount of formaldehyde vaporized, six ounces. Material exposed, three tubes of mixed cultures of diphtheria bacilli upon nutrient blood serum in open Petri dishes, a quantity of sputum containing tubercle bacilli in a shallow, wide-mouthed bottle, and four tubes of mixed cultures of diphtheria bacilli. Time of exposure, five hours. Result: tubes inoculated from the cultures all showed good growths at the end of twelve hours.

"Experiment 2.—Cultures of diphtheria and sputum containing tubercle bacilli were exposed in the same way and under the same conditions for six hours. Amount of formaldehyde vaporized, eight ounces. Inoculations from the cultures exposed upon appropriate media all showed that the diphtheria and tubercle bacilli in the cultures and sputum had not been destroyed, nor had their power for growth been perceptibly interfered with.

"Experiment 3.—Cultures of diphtheria bacilli and sputum containing tubercle bacilli exposed as in experiment 1. Result: similar to those of experiments 1 and 2. In this experiment eighteen ounces of formaldehyde were used.

"Experiment 4.—As objection was made that the room in which experiment 3 was conducted was not tight enough, although the door casings and casings about the transoms were fitted with rubber weather strips, additional means were taken to prevent the escape of gas by caulking with paper the spaces about the door casings and transoms. Amount of formaldehyde vaporized, thirty ounces. Time of conducting the experiment while the lamp of the apparatus was still burning, forty-five minutes. Material exposed similar to that in experiment 1. Result: similar to that in experiment 1.

"Experiment 5.—Four pounds of sulphur burned in the same room in the presence of steam generated from two quarts of water in a basin eight inches wide placed over a two-flamed Bunsen

burner. The cultures made after six hours' exposure showed no growth. Furthermore, several unused tubes of Loeffler diphtheria serum inadvertently left in the room were afterward found to have been rendered useless by the sulphur fumes. No growth could be obtained in these tubes, even though carefully inoculated with an abundance of mucus from the throats of patients having diphtheria.

"The results of these experiments lead me to believe that the value of formaldehyde as a disinfectant, with a sufficient penetrating power thoroughly to disinfect in practice, has not yet been proven."

Apropos to the foregoing, *dryness of the air* is shown by the following communication to be an essential factor:

COLDWATER, Mich., April 8, 1898.

DR. A. N. BELL, Editor SANITARIAN:

Some experimental observation, with the limited means at command, of the use of formaldehyde as a disinfectant, more especially to the results as determined by microscopic and culture work upon the bacteria, have suggested that in the use of this agent two circumstances should be noted in order to secure thorough disinfection.

First—The hygrometric condition of the air in the apartment to be disinfected. Under this is to be included the dryness of articles, furniture, etc.; and,

Second—That in a hot, dry atmosphere disinfection by means of formaldehyde appears to be much more efficient and satisfactory.

The observations here are not extensive enough to formulate a decided rule as to the hygrometric and thermometric ranges, but such as they are this environment has led me to the above conclusion. More extensive laboratory examination is needed to determine the value of these suggestions.

I am, very respectfully, etc.,

T. J. TURNER,
Medical Director U. S. N. (Retired).
Health Officer City of Coldwater.

THE YELLOW FEVER BACILLUS—ANOTHER?—During the last few months, says the "North American Practitioner," Professor Klebs has been making some very critical investigations in the

effort more fully to determine the cause of yellow fever. On March 5th he presented a most important paper at a meeting of the physicians in attendance upon the course at the Chicago Post-Graduate Hospital. Its importance is derived from the fact that Professor Klebs was able, by means of microscopic specimens, to point out bodies which had not been hitherto described and which he does not as yet find elsewhere, than in organs of those who had died of yellow fever.

Having obtained portions of all the organs of two cases of yellow fever patients who had died of the typical form of the disease, he made from them a multitude of sections, and has spent months in their examination. He did not succeed in finding the bacillus described by Lanarelli nor the X bacillus of Sternberg, but he did succeed in finding peculiar bodies in the stomach, duodenum and liver of twice the size of red corpuscles. He believes they belong to the protozoa. He thinks their discovery due to the use of a new staining method which he has developed during the last month. Besides these structureless bodies, he found a true sporulating form with many sporules in the duodenum. These were found in both cases while control experiments gave negative results. These bodies have not before been discovered and described owing, no doubt, to the lack of a suitable staining method.

While Professor Klebs believes these bodies to be the cause of yellow fever, yet he distinctly states that he desires to withhold any definite claim until cultures and animal experiments can lead to positive conclusions. The discovery of these bodies will mark it as a most notable event, if, as the result of further investigation, they shall prove to be productive of the disease.

Professor Klebs is best known in this country in connection with the discovery of the diphtheria bacillus, known as "Klebs' bacillus." In Germany he is regarded as one of the three most eminent pathologists.

THE NATIONAL HEALTH SERVICE is *status quo ante bellum*, and from present indications appears likely to so remain for some time to come, the attention of Congress being absorbed by matters of more imminent importance. The showing made by the adversaries of the Marine Hospital Service, at the hearing before the Committee on Interstate and Foreign Commerce, February 18-19th, is well calculated to strengthen the hands of

the Marine Hospital Service in its present legal status, even though the laws governing that service should not be amended, as provided in the Caffery bill. Should the subject be taken up again, however, it is inconceivable that the "Spooner" bill, with its misconceptions and uncertainties of intention, as displayed by its author, Dr. Wingate, can be made acceptable to Congress. On being asked by the chairman of the committee to give his views of the authority of Congress to establish a general system of sanitation, distinguished from quarantine, Dr. Wingate threw himself on the authority of the American Medical and American Public Health Associations. Yet he was constrained to admit "that the American Medical Association did not adopt this bill at their last meeting, and I will grant that that is true. The committee made a report at that meeting and the motion was made to adopt the report of the committee and to continue the committee; but through some oversight on the part of the chairman, the motion was not put, the committee was continued, but the report of the committee was not adopted. By correspondence since then with members of that association and other members of the medical profession all over the country, I am thoroughly convinced that this bill voices the sentiment of the medical profession of the country.

"Moreover, the American Public Health Association, as you have been told by its ex-president, Dr. Horlbeck, adopted it at a meeting, it is true, when there were few present, but I am sure from the evidence I have gained from other members by correspondence since, that had the vote been taken earlier in the session there would have been a very large vote in favor of adopting this measure. Not only that, but the Academy of Medicine in New York, which we all recognize to be one of the leading bodies of medical men in this country, whose influence is world-wide, has adopted it; and all medical associations that have given any attention to the subject have adopted it, besides a large number of business associations, such as the New York Chamber of Commerce, and I am very positive the New York Board of Trade and Transportation. * * *

"England, which has to-day the best sanitary laws in the world —and that fact is recognized generally—has no quarantine, because her sanitation is in such condition that she does not require quarantine. When a disease invades her shores her sanitary conditions are such that they are able to cope with that disease and,

without the aid of quarantine, prevent it from spreading."—A remarkable mistake this for a State health officer who has been so long in service as has Dr. Wingate. For while England eschews the word quarantine, her laws provide that "Any ship or vessel lying in any river, harbor or other water not within the district of a sanitary authority, will be deemed to be within the district of such sanitary authority as may be prescribed by the local government board; and where no authority has been prescribed, then of the sanitary authority whose district nearest adjoins the place where such ship or vessel is lying." Indeed, the port sanitary officers in England are endowed with powers and appliances comprehending all the instrumentalities essential to effective sanitation at the port of arrival. These comprise: Isolation hospitals for the care of infectious diseases; means of transporting such cases to hospitals and officers from ship to ship; apparatus for disinfection; special provision against the landing of rags or other merchandise or things liable to infection from infected ports. And the medical officer of health is empowered and required to take such steps as may appear to him to be necessary for preventing the spread of infection.

"The Chairman—I read in the first section—

" 'That there shall be established a commission of public health, to be under the supervision of a commission of public health, who shall have the aid of an advisory council consisting of a representative from each State and Territorial board of health.'

"Apparently there are three distinct bodies there.

" 'The duties of which shall be to collect and diffuse information upon matters affecting the public health, etc.'

"To which one of these three bodies does this latter language apply?"

"Dr. Wingate—I understand, sir, that it applies to the commission. That commission is composed of the commissioner of public health and the representatives—one from the Army and Medical Corps, one from the Department of Justice, and one from each State and Territorial board of health. That constitutes the commission which shall pass rules—not laws, but rules, carrying out the details of the laws which Congress passes.

"The Chairman—I was not able to gather exactly that conclusion.

" 'There shall be established a commission of public health, to be under the supervision of a commission of public health.'

"There is a commission of public health that is to be under the supervision of another body—a commission of public health—and

it shall have the aid of an advisory council. It looks to me as if there were a multiplicity of bodies there.

"Dr. Wingate—I think that second 'commission,' Mr. Chairman, should have been 'commissioner.' The ambiguity of this phraseology came about in this way: In the first place, the bill was drafted to establish a department of public health, to be under the supervision of a commissioner of public health, but by the advice of attorneys it was changed to a commission instead of a department, as we could not have a department unless it was placed in the Cabinet, and that could not be. So this wording was mixed in that way. I think that second should be 'commissioner' instead of 'commission.'

"The Chairman—Would you give the committee your idea of the meaning of the word 'conclusive' where it occurs in section 22 of that bill? I notice it occurs twice—'and it shall appear conclusive.'

"Dr. Wingate—I will state, Mr. Chairman, that the matter of excluding that section, and also section 14, is under consideration, and it is very possible it is advisable to take those two out of the bill entirely. It is obnoxious, I understand, to our States' rights friends to the extent that they think that ought not to be in, and it does not materially affect the bill so far as its friends are concerned, and I think that that section, and also section 14, will be stricken out."

Yet this bill is represented as the joint wisdom of the American Medical and American Public Health Associations. It is an inconsiderate and hastily put together measure intended to provide for and to confer a national status on the executive officers of the State boards of health.

As for the rest—Drs. Doty, Horlbeck, Hunter and Porter—their contention was alike defective with Dr. Wingate's, but more particularly for revenue to support their offices—lest the Caffery bill, if it became a law, should encroach upon their State right privileges of collecting fees from vessels during the summer season, whether disease existed on board or not.

The inconsistency of such a board with prompt and effective work was well shown by Dr. C. M. Drake, of Atlanta, Ga.

"First, as to the creation of a commission of 52 members, for which it provides. This would establish a deliberative body second in size to the United States Senate, which would be unwieldy and slow in the face of pestilence and panic. To call this third

house of Congress together would require at least five or six days, as this amount of time would be required for a member from California or Oregon to reach Washington. As provided in the Spooner bill, 47 members of the commission are to be elected from State and Territorial boards of health. It must be remembered that several States and Territories have no provision for State or Territorial boards of health, and such States and Territories would have no representation in such a commission. For instance, the great Commonwealth of Georgia, with its maritime border, has no statutory provision for a State board of health. It is a well-established fact that during the prevalence of yellow fever in the South last fall municipal health authorities wholly disregarded rules and regulations formulated and promulgated by State boards of health, and that the authority of State health officers to exercise jurisdiction in quarantine affairs was repudiated by county and municipal health officers. What guarantee have we that this would not be repeated under the Spooner bill, entailing, as it most certainly would, expensive and fatal delays?

"I would respectively call your attention to section 22, page 21, lines 1 to 7, inclusive, of the Spooner bill, 'and it shall appear conclusive that the State, Territorial, or local health authorities are unable to prevent the spread of such disease, or that said health authorities are inefficient in the performance of their duties, he is hereby authorized to take such action as may be necessary to prevent the spread of such diseases from one State or Territory into another,' etc.

"In my opinion the above lines delegate the most dangerous authority ever vested in a subordinate officer. The commissioner —a political appointee of the President—is clothed with such power that he may at his pleasure decide when or where State or local authorities are inefficient, and may, without let or hindrance, set aside and override State and local laws, and intervene and become supreme. * * *

"I deny most emphatically that the Spooner bill represents the sentiments and expressed wishes of the medical profession of this country. I assert here that I do not believe that one-twentieth of the medical profession of the country has read the Spooner bill or that they are conversant with its provisions." In evidence of this he cited the action of several medical societies and medical journals of the highest authority, as also did Dr. Wyman.

MORTALITY AND MORBILITY REPORTS AND REVIEWS.

Correspondents under this head are particularly requested to be as prompt as possible.

ALABAMA.—W. H. Sanders, M. D., State Health Officer, Montgomery.

Mobile, 37,817. Rhett Goode, M. D., Health Officer. Reports for five months—August-December—consecutively: Deaths, 56, 74, 121, 80, 61—382. Annual death rate per 1,000 for the period, 24.25; for the month of October (121), 38.65. The excess of mortality for this month appears to have been chiefly due to yellow fever, from which there were 24 deaths. Deaths from this disease during the five months respectively were: 0, 12, 24, 12, 0—48. Four were of colored persons.

Quarantine.—At a meeting of the Quarantine Board, March 11, Dr. Scales, Health and Executive Officer, laid before the board a communication from Surgeon General Wyman, enclosing a circular of the Treasury Department prescribing the imposition of quarantine by the Marine Hospital Service and all State maritime quarantines on April 1. All necessary repairs to the station were ordered to be made and the station to be opened accordingly. Dr. Robert Goldthwaite was elected Health Officer of the port.

CALIFORNIA.—C. A. Ruggles, M. D., President, Stockton; W. P. Matthews, M. D., Secretary, Sacramento.

San Francisco, 360,000. A. S. Lovelace, M. D., Health Officer. Report for the fiscal year ending June 30, 1897: Births, 5,159; deaths, 6,150—death rate per 1,000, 17.08. The prevailing causes of death were: Phthisis pulmonalis, 896; heart disease, 756; pneumonia, 513; violence, 449; cancer, 344; atrophy, 265; nephritis, 248; asthma, 237; hepatitis, 236; apoplexy, 211; encephalitis, 210; bronchitis, 195; enteritis, 127; convulsions, infantile, 118; diphtheria (and croup), 110; typhoid fever, 75; peritonitis, 68; cholera infantum, 68; gastro-enteritis, 62.

Los Angeles, 103,000. Report for February: Deaths, 123. From phthisis, 27; acute pulmonary diseases, 11. Annual death rate, 14.33.

Sacramento ("Bee") March 10.—It is estimated that there are at the present time about 200 cases of typhoid fever in this city.

COLORADO.—A. Stedman, M. D., President, Denver; Henry Sewell, M. D., Secretary, Denver.

Denver, 167,000. William P. Munn., M. D., Health Commis-

sioner. Report for February: Deaths, exclusive of 9 stillbirths, 162. From phthisis (contracted elsewhere), 31; death rate per 1,000 per annum, 11.64; death rate per annum, excluding phthisis, 9.41. Cases of infectious diseases reported: Diphtheria, 28—2 deaths; scarlet fever, 33—3 deaths; measles, 31—1 death.

CONNECTICUT.—Professor William H. Brewer, Ph. D., New Haven, President; Prof. C. S. Lindsley, M. D., Secretary, New Haven. The Secretary's bulletin for March: Deaths reported, 1,272, 97 less than reported in March last year, and one less than the average number of deaths in March for the five years preceding the present.

The death rate was 17.3 for the large towns; for the small towns, 17.1, and for the whole State, 17.3.

The deaths from zymotic diseases were 127, being 9.9 per cent. of the total mortality.

Summary of the vital statistics for 1897: Total number of births reported in Connecticut for 1897 was 20,509, which gives a birth rate of 23.2 to 1,000 population.

The birth rate for 1896 was 24.9.

The total marriages reported was 6,358, which gives 7.2 to 1,000 population. The marriage rate for 1896 was 7.8.

The total number of deaths reported was 13,923, which gives a death rate of 15.6 per 1,000 population. The death rate for 1896 was 17.5.

DISTRICT OF COLUMBIA, 276,963—83,176 colored.—Wm. C. Woodward, M. D., Health Officer, reports the mortality for four weeks ending April 2, 463. Death rates, 18 for the white, 27 for the colored, and 20 for the whole population. Deaths from zymotic diseases, 34; diphtheria, 8; consumption, 52.

FLORIDA.—Jacksonville ("Citizen"), April 1.—Quarantine detentions go into effect again to-day. * * * The history of yellow fever epidemics is such that we are merely discharging a duty to the public when we urge that every sanitary precaution be taken and that every town in Florida begin at once to put each nook and corner into the most wholesome condition.

ILLINOIS.—L. Adelsberger, M. D., President, Waterloo; J. A. Egan, M. D., Secretary, Springfield.

Chicago, 1,619,226. A. R. Reynolds, M. D., Commissioner, reports: Total deaths from all causes during the month of Febru-

ary, 1898 (white, 1,980; colored, 43), 2,023; monthly death rate, February, 1898, per 1,000 of 1,619,226 population (white, 1.24; colored, 1.89): 1.26; annual death rate, twelve months ended February 28, 1898, per 1,000 of mean population (white, 13.80; colored, 21.89): 13.52.

Deaths from diphtheria, 64; typhoid fever, 32; influenza, 94; consumption, 215; other tubercular diseases, 33; pneumonia, 961; bronchitis, 139. Contagious diseases reported during the month: Diphtheria, 197; scarlet fever, 73.

IOWA.—J. I. Gibson, V. S., President, Denison; J. F. Kennedy, M. D., Secretary, Des Moines.

State Board bulletin for March reports, since preceding issue: Diphtheria in Washington township, Harrison county; Spaulding township, Union county; Burrell township, Decatur county; Boone township, Hancock county; Fulton township, Muscatine county; Round Prairie township, Jefferson county; Boone township, Wright county; Marion township, Lee county; Orient township, Adair county; Palmyra township, Warren county; Pleasant Grove township, Mahaska county; Pleasant township, Wright county; Vinton, Kellerton, Steamboat Rock, Hubbard, Audubon, Dodge township, Boone county.

Scarlet Fever—Shelby, Dysart, Silver Lake township, Worth county.

Measles—Eldorado township, Benton county, Newton.

KANSAS.—E. M. Hoover, M. D., President, Halstead; H. Z. Gill, M. D., LL. D., Secretary, Topeka.

Topeka, April 3.—The State Board of Health has appointed the following physicians to be sanitary officers of the board for their respective localities: W. A. Haynes, Sabetha; W. W. Nye, Hiawatha; H. H. Swallow, Troy; R. G. Hill, Wamego; John E. Love, Wheeling; R. A. Miller, Atchison; J. L. Fuerbey, Topeka; H. R. Maxon, Nortonville; E. J. Lutz, Kansas City; S. J. Neiberger, Burlington; Thomas Kirkpatrick, Garnett; C. P. Lee, Pleasanton; A. H. Mann, Toronto; C. H. Hall, Fort Scott; A. W. Cormack, Fredonia; W. W. Evans, Independence; J. T. Curtis, Dwight; Frank T. Johnson, Cottonwood Falls; M. F. W. Jackson, Emporia; John L. Hays, Howard; W. T. Evans, Eden; C. S. Webster, Marysville; H. M. Ocheltree, Haddam; D. P. Cook, Clay Center; C. H. Lutz, Belleville; D. W. Elz, Concord; A. B. Peters, Mankato; J. K. Cranshaw, Tipton; Willis Cannon, Smith Center;

S. S. Fisher, Phillipsburg; J. C. Parker, Woodston; E. M. Turner, Norton; James I. Norris, Boyce; L. C. Tilden, Oberlin; E. D. York, Atwood; V. C. Eddy, Colby; F. C. Tracy, St. Francis, and T. H. Smith, Goodland.

LOUISIANA.—Edmond Souchon, President, New Orleans; G. F. Patton, M. D., Secretary, New Orleans.

New Orleans, 275,000—80,000 colored. Bulletins of the State Board for October, November and December, 1897. S. R. Oliphant, M. D., President. Total mortality in New Orleans for the three months, respectively: 650—199 colored; 580—171 colored; 566—219 colored. And the death rates per 1,000: W. 27.75, C. 29.85—28.36; W. 25.12, C. 25.65—25.31; W. 21.35, C. 32.85—24.70. Of yellow fever: October, 1,289 cases, 168 deaths; November, 100 cases, 5 deaths; December, 7 cases, no deaths.

The death rates here given cannot be regarded as a measure of the healthfulness of the city for the period, inasmuch as no allowance is made for a considerable reduction of the population by absentees—probably not less than one-tenth of the population.

Dr. Edmond Souchon, President of the Board of Health, has appointed the following physicians to serve at intertropical fruit ports during the quarantine period, beginning April 1: Dr. C. W. Knight, Belize, British Honduras; Dr. A. P. Webb, Livingston, Guatemala; Dr. L. A. Wailes, Port Cortez, Spanish Honduras; Dr. W. K. Fort, La Ceiba, Spanish Honduras; Dr. Will H. Woods, Bluefields, Nicaragua; Dr. William H. Carson, Port Limon, Costa Rica; Dr. W. B. Bonsall, Bocas del Toro, U. S. Colombia.

MAINE.—C. D. Smith, M. D., President, Portland; A. G. Young, M. D., Secretary, Augusta.

For the disinfection of school books, the Secretary directs: Have a tin box made 15 inches long, 11 inches wide, and 8½ inches deep. Have a perforated false bottom or rack to support the books half an inch above the bottom of the box. Have a tightly fitting cover. To disinfect books, pour an ounce of a 40% solution of formaldehyde (sometimes called formalin) into the bottom of the box, put in the rack and upon it the books resting upon their front edges, having the leaves as loosely open as possible. Put the cover on and let the books remain exposed to the formaldehyde over night. This will do for the disinfection of a few books at a time. If school books have actually been used by persons sick with diph-

theria or scarlet fever, the safest way would be to burn the few books thus surely infected, although the experiments of Professor Robinson show that books may be disinfected with formaldehyde. Some other experimenters have corroborated his observations, and some have not succeeded so well.

MARYLAND.—John Morris, M. D., President, Baltimore; John S. Fulton, M. D., Secretary, Baltimore.

Twelfth Biennial Report, for the two years ending December 31, 1897. A volume of 300 pages, comprehending in detail the proceedings of the board, together with special reports of the investigations of typhoid fever, water analysis, adulterations of vinegar, grape juice and malt liquors; papers by Dr. John Morris, member of the board, on Illuminating Gas, and Rabies; Minutes of the Public Health Conference, February, 1897, and of the Proceedings of the Maryland Public Health Association, November, 1897. The Secretary's summary annotates the advances made in dealing with nuisances, offensive trades, infectious diseases, water pollution, etc., under improved legislation during recent years; and, in some instances, needful amendments by which the laws may be made more effective, in particular with regard to the local boards of health and their needful power. A new vital statistics law is urged as eminently necessary to full records of marriages, births and deaths, as well as of such differentiation of diseases and power to require reports, in order to prevent the spread of epidemics. A bacteriological laboratory is a pressing need of the board to keep abreast of the times in the protection of the public health: "In the study of food and drink and of infectious diseases, bacteriological methods are absolutely essential to correct conclusions."

The papers on Vital Statistics, by John S. Fulton, M. D., and Chas. L. Mattefeldt, M. D., lay a good foundation for the much-needed legislation on the subject; as also do the papers of Drs. Wm. Royal Stokes and Delano Ames, on Diphtheria, and those of Dr. Louis E. Livergood on the Bacteriology of Typhoid Fever, and Dr. Stokes on the Bacteriological Examination of Water, of the State Board's need of a bacteriological laboratory. Besides these and the discussion on them, especially worthy of mention for their practical utility, are the papers on Typhoid Fever, by Drs. T. B. Owens, Jno. H. McCormick, August Stabler, and P. F. Sappington; Pollution of Soil and Water, by John S. Fulton, M. D.; Dis-

infection, by Dr. A. C. Abbott; Disinfectants, by Dr. W. R. Stokes; Dangers Arising from Slaughter Houses, by Dr. Ch. W. Stiles; and the papers on School Sanitation, by Drs. Wm. D. Thomas, S. J. Fort, Hiram Woods, and Mrs. Mary K. Miller.

Baltimore, 506,398—73,344 colored.—G. Hampson Jones, M. D., Health Commissioner, reports for February: Deaths, 769, an increase of 81 compared with the corresponding month of February, 1897. Of these 573 were whites and 196 colored; a death rate of 15.96 per thousand for the former and 31.36 per thousand for the latter. The death rate per thousand for the whole population was 18.23; 63 died from infectious diseases, 94 from consumption, 125 from pneumonia, 33 from bronchitis, 4 from influenza, 18 from Bright's disease, 21 from nephritis, 22 from apoplexy, and 8 from typhoid fever; 278, or 32.24 per cent., of the total deaths were in children under five years of age.

Cases of infectious diseases reported, 491—a decrease of 37 compared with the preceding month. Deaths in public institutions, 88, of which 23 were reported as non-residents.

The Weather.—The mean barometric was 30.15 inches; mean temperature, 35°; total precipitation, 1.32 inches, a deficiency in precipitation during the month of 2.18 inches; prevailing direction of wind, west.

MICHIGAN.—Hon. Frank Wells, President, Lansing; Henry B. Baker, M. D., Secretary, Lansing.

The Secretary reports for the month of March: Including reports by regular observers and others, consumption was reported present at 137 places, measles at 100 places, scarlet fever at 69 places, typhoid fever at 62 places, diphtheria at 52 places, whooping-cough at 22 places and small-pox at 2 places.

Reports from all sources show consumption reported at 20 places more, measles at 15 places more, scarlet fever at 1 place more, typhoid fever at 9 places more, diphtheria at 8 places less, whooping-cough at 5 places less, and small-pox at 1 place more, in the month of March, 1898, than in the preceding month.

The weather at the State capital for the month, compared with the preceding month—the prevailing direction of the wind was southeast (instead of northwest), the velocity was 0.2 of a mile per hour less, the temperature was 13.54 degrees higher, the rainfall was 1.29 inches more; the absolute humidity was more, the relative humidity less; the day ozone more, the night ozone less, and the depth of water in the observation well was 4 inches more.

Total mortality in the State returned (Monthly Bulletin of Vital Statistics for the month of March) was 2,686. This is the largest number reported for any month since the beginning of registration, in September, 1897, and exceeds the number for February by no less than 425. As March contains three more days than the preceding month, the corresponding annual death rate does not exceed that for February quite as much as the relative number of deaths would seem to indicate. The rate for March was 13.8 per 1,000 population, as compared with 12.8 for February and 12.1 for January. There were 398 deaths of infants under one year of age and 189 deaths of children aged from one to four years. The principal causes of death were as follows: Consumption, 233; typhoid fever, 23; diphtheria and croup, 29; scarlet fever, 13; measles, 18; whooping-cough, 13; pneumonia, 375; cerebro-spinal meningitis, 35; influenza, 98. The only disease showing largely increased prevalence was pneumonia, which continued to increase, as it has for some months past. The number of deaths from this cause in February was 288. Influenza, measles and cerebro-spinal meningitis showed some degree of increase. Consumption was nearly stationary in prevalence, and so were scarlet fever and whooping-cough. Typhoid fever and diphtheria showed some reduction of mortality.

MINNESOTA.—Franklin Staples, M. D., President, Winona; H. M. Bracken, M. D., Secretary, St. Paul.

Minneapolis, 225,600.—H. N. Avery, M. D., Commissioner of Health; Miss Edwina J. Peck, Registrar of Vital Statistics. Report for March: Deaths, 211—84 under five years of age; from zymotic diseases, 44; typhoid fever, 8; measles, 29; phthisis pulmonalis, 29; pneumonia, 18. Annual death rate, 11.22. Cases of contagious diseases reported during the month: Diphtheria, 22; scarlet fever, 5; measles, 1,644; typhoid fever, 15.

MISSISSIPPI.—Jackson, March 27.—At last night's meeting of the State Board of Health the following resolution was unanimously adopted:

"Resolved, by the Mississippi State Board of Health, now in session, That no quarantine legislation should be had at this session of Congress unless a public health commission can be provided for; and we request our Senators and Representatives to oppose any measure that takes from the State its right to manage its own internal quarantine, the Caffery bill being especially objectionable."

Mississippi City, Miss., April 5.—The Board of Supervisors of this (Harrison) county adjourned to-day, after remaining in session two days. Before adjourning they drew up a petition to the State Board of Health asking that board to petition Surgeon-General Wyman, of the Marine Hospital Service, to have established on the Gulf coast a thoroughly equipped bacteriological laboratory for the purpose of making diagnoses and tests of yellow fever, and to co-operate with the State and local health officers in preventing the spread of yellow fever where it is found to exist.

MISSOURI.—E. L. Standlee, M. D., President, St. Louis; Paul Paquin, M. D., Secretary, St. Louis.

St. Louis, 600,000—35,000 colored. M. C. Starkloff, M. D., Commissioner of Health, reports for February: Deaths, 708—187 under five years of age; from zymotic diseases, 73; diphtheria, 25; typhoid fever, 6; phthisis, 85; pneumonia, 126. Annual death rate, 14.16.

Kansas City, 200,000. E. Von Quast, M. D., Health Officer. Report for February: Marriages, 84; births, 243; deaths, 139. Deaths from phthisis, 6; pneumonia, 11; diphtheria, 3; typhoid fever, 1. There appears to be a remarkable exemption from preventable diseases. Annual death rate per 1,000 population, 8.34.

NEBRASKA.—Omaha, 140,452. S. K. Spalding, M. D., Health Commissioner.

Report for February: Deaths, 79—36 under five years of age. From phthisis, 8; pneumonia, 15; debility, 9. Death rate, 6.7.

NEW JERSEY.—C. F. Brackett, M. D., President, Princeton; Henry Mitchell, M. D., Secretary, Asbury Park.

Newark, 230,000. Health Officer Chandler reports for the four weeks ending March 26: Deaths, 329—113 under five years of age; from diphtheria, 9; consumption, 49; pneumonia, 58. Annual death rate, 18.19.

Paterson, 109,884. J. L. Leal, M. D., Health Officer, reports for February: 119 deaths—37 under five years of age. Annual death rate, 10.82. Deaths from diphtheria, 4; typhoid fever, 4; consumption, 11; pneumonia, 19.

NEW YORK.—Daniel Lewis, M. D., President, New York; B. T. Smelzer, M. D., Secretary, Albany.

The Secretary's bulletin for February reports that the 9,213 deaths reported during the month represent a death rate per 1,000

population annually of 17.60, against one of 17.00 in the month preceding, and of 19.00 in the corresponding month of last year, the average death rate for this month for the past ten years having been 18.35. The average daily mortality increased from 311 in January to 328. The mortality of early life (under five years) increased from a daily average of 78 to that of 90, and from a percentage of the total deaths of 25.0 to one of 27.5. The average daily mortality from zymotic diseases is the same as it was last month, about 30 deaths. There were, relatively, 125 more deaths from acute respiratory diseases, and 200 from other local diseases, 75 more from consumption and an increase from causes unclassified and from old age. Compared with February, 1896, the mortality is less by 600, there having been 125 fewer deaths from zymotic diseases, and 360 fewer from consumption and acute respiratory diseases, other local diseases having about the same mortality in the two months, while old age and unclassified causes show a material decrease. Grippe is estimated to have caused 600 deaths during the month, against 400 in January and 700 in February, 1897. In rural parts of the State 5.5 per cent. of the mortality was from zymotic diseases; 8.5 per cent. from consumption, and 18.0 per cent. from acute respiratory diseases; in the rest of the State, 10.0 per cent. of the deaths were from zymotic diseases, 12.0 from consumption, and 20.0 per cent. from acute respiratory diseases. Diphtheria has a reported mortality of 275, which is less by 50 than in January, and less by 100 than in February, 1897. There is no noteworthy variation with the other diseases of the zymotic group. The weather condition were the ordinary average for the month, the precipitation being about 3.00 inches, the average temperature 26° for the month, the mean relative humidity 77% and the dew point 21°, with westerly winds of moderate velocity.

New York City, 3,438,899. Michael C. Murphy, President; W. T. Jenkins, M. D., and J. B. Cosby, M. D., Commissioners of Health; Emmons Clark, Secretary; Charles F. Roberts, M. D., Sanitary Superintendent; Roger S. Tracy, M. D., Registrar of Records:—

Borough of Manhattan, 1,911,755. Frederic H. Dillingham, M. D., Assistant Sanitary Superintendent; Thomas C. Taylor, M. D., Assistant Registrar of Records. Deaths, 2,748—1,057 under five years; death rate, 18.75; deaths from zymotic diseases per 1,000 deaths from all causes, 112.75; from typhoid fever, 10;

scarlet fever, 60; diphtheria, 101; acute respiratory diseases, 619; consumption, 290.

Borough of Bronx, 13,075. Eugene Monogan, M. D., Assistant Sanitary Superintendent; Arthur J. O'Leary, M. D., Assistant Registrar of Records. Deaths, 281—93 under five years; death rate, 21.50; from zymotic diseases per 1,000 from all causes, 128.50.

Borough of Brooklyn, 1,197,100. Robert A. Black, M. D., Assistant Sanitary Superintendent; Sylvester J. Byrne, M. D., Assistant Registrar of Records. Deaths, 1,613—522 under five years; death rate, 17.85; deaths from zymotic diseases per 1,000 from all causes, 97.50; typhoid fever, 9; diphtheria, 72; acute respiratory diseases, 290; consumption, 197.

Borough of Queens, 128,042. Obed L. Lusk, M. D., Assistant Sanitary Superintendent; Frank Wickham, M. D., Assistant Registrar of Records. Deaths, 161—49 under five years; death rate, 17.80; deaths from zymotic diseases per 1,000 from all causes, 100.

Borough of Richmond, 64,927. Geo. C. Hubbard, M. D., Assistant Sanitary Superintendent; J. Walter Wood, M. D., Assistant Registrar of Records. Deaths, 84—7 under five years; death rate, 16.85; from zymotic diseases per 1,000 from all causes, 85.

Totals: Deaths, 4,887—1,728 under five years of age; death rate, 15.50; deaths from zymotic diseases per 1,000, from all causes, 108; deaths from typhoid fever, 23; scarlet fever, 85; measles, 73; diphtheria, 194; acute respiratory diseases, 1,005; consumption, 592.

Buffalo, 360,000. Ernest Wende, M. D., Health Commissioner, reports for February: Deaths, 341—118 under five years; death rate, 12.33; from zymotic diseases per 1,000 from all causes, 132.50; diphtheria, 8; typhoid fever, 8; acute respiratory diseases, 53; consumption, 36.

Rochester, 175,000. George W. Goler, M. D., Health Officer. Report for February: Deaths, 177—27 under five years; death rate, 13.56; from zymotic diseases per 1,000 from all causes, 70; diphtheria, 5; acute respiratory diseases, 25; consumption, 221.

Albany, 100,000. Report for February: Deaths, 144—32 under five years; death rate, 17.30; from zymotic diseases per 1,000 from all causes, 118; typhoid fever, 8; diphtheria, 6; acute lung diseases, 21; consumption, 19.

Syracuse, 120,000. Report for February: Deaths, 122—14 under five years; death rate, 12; from zymotic diseases per 1,000 deaths from all causes, 75.

NORTH CAROLINA.—George G. Thomas, M. D., President, Wilmington; Richard H. Lewis, M. D., Secretary, Raleigh.

The March Bulletin summarizes the mortality for February, from twenty-three towns, with an aggregate population of 126,110—55,071 colored: Aggregate deaths respectively, 146—58 white, 88 colored—representing annual death rates, 13.9; 9.8; 19.2. The causes of death were, in the order of the greater prevalence: Consumption, 24; pneumonia, 19; heart disease, 11; brain diseases, 10; typhoid fever, 4; diarrhœal diseases, 3, and measles, 2.

OHIO.—S. P. Wise, M. D., President, Millersburg; C. O. Probst, M. D., Secretary, Columbus.

State Board Bulletin for March reports cases of infectious diseases for four weeks ending February 26, from 55 places, aggregating a population of 1,307,875: Diphtheria and croup, 122—25 deaths; scarlet fever, 140—6 deaths; typhoid fever, 92—22 deaths; whooping-cough, 182—11 deaths; measles, 2,059—7 deaths.

Cincinnati, 405,000. J. M. Winthrow, M. D., Health Officer, reports for February: 418 deaths—118 under five years of age. Annual death rate, 12.38. From consumption, 62; pneumonia, 53; bronchitis, 32; diphtheria, 12; typhoid fever, 9; whooping-cough, 7.

Cleveland, 350,000. J. L. Hess, M. D., Health Officer, reports for the month of February: Deaths, 342—106 under five years. From diphtheria, 8; typhoid fever, 8; (phthisis, 17); tuberculosis (17)—34; pneumonia, 40; bronchitis, 13. Death rate, 14.30.

For the year ending December 31, 1897, the total number of deaths was 5,007. The death rate is estimated on a population of 350,000, which is an increase of 20,000 over the estimated population of 1896. During the year 1896 4,859 persons of Cleveland died, showing an increase in the number of deaths for 1897 of 148 over those of 1896, yet it is with a great deal of satisfaction that I am able to report to you that the death rate has been reduced from 14.71 per 1,000 for 1896 to 14.30 per 1,000 for 1897. Of infections there were reported during the year 256 cases of typhoid fever with 73 deaths from the same cause; 379 cases of scarlet fever with 20 deaths from the same cause; 456 cases of diphtheria with 80 deaths from the same cause; 93 cases of membraneous croup with 51 deaths from the same cause; 1,958 cases of measles

with 8 deaths from the same cause; 16 cases of erysipelas with 9 deaths from the same cause; 3 cases of puerperal fever reported with 5 deaths from the same cause; 122 cases of whooping-cough with 25 deaths from the same cause; 37 cases of chicken-pox with no deaths.

PENNSYLVANIA.—Pemberton Dudley, M. D., President, Philadelphia; Benjamin Lee, M. D., Secretary, Philadelphia.

Philadelphia, 1,240,266. Benjamin Lee, M. D., Health Officer, reports for the four weeks ending April 2: Deaths, 1,900—679 under five years of age. From diphtheria, 122; typhoid fever, 37; consumption, 215; pneumonia, 298.

Pittsburg, 285,000. Report for the four weeks ending March 26: Deaths, 414—163 under five years of age; consumption, 39; pneumonia, 100; whooping-cough, 11. Death rate, 18.2.

SOUTH CAROLINA.—Charleston, 65,165—white, 28,870; colored, 36,295. H. B. Horlbeck, M. D., Health Officer, reports for four weeks ending March 26: Deaths, 125—96 colored. Under five years of age, 37. Annual death rate—white, 13; colored, 34.41—24.93.

TENNESSEE.—W. J. McMurray, M. D., President, Nashville; J. A. Albright, M. D., Secretary, Somerville.

Nashville ("American"), April 6.—The State Board held its quarterly session yesterday. The Secretary reported the work done with small-pox and gave the following list of points in Tennessee infected with small-pox, together with the number of cases occurring during February and the numbers respectively developed within the last ten days: Knoxville, 11, 5; Chattanooga, 7, 2; Mingo, 2, 0; Lenoir City, 3, 0; Johnson City, 11, 1; Jellico, 8, 7; Newcomb, 3, 0; Morristown, 1, 1; Rutledge, 1, 1. Totals: During the month of 47; within the last ten days, 17.

The following is a list of points infected, together with the number of cases of small-pox developed in Tennessee during the month of March:

Chattanooga, 12; Bristol, 1; Rockford, 1; Morristown, 5; Shields, 4; Knoxville, 17; Johnson City, 2; Rutledge, 11; Mingo, 1; Sprowles, 1; Elk Valley, 1; Jellico, 1. Total, 57.

Memphis, 61,747—30,317 colored. Heber Jones, M. D., President; M. Haase, M. D., Secretary. Report for February: Deaths, 116, of which 49 were colored, and 12 under five years of age. An-

nual death rate—white, 26.20; colored, 19.32; total, 22.73. Deaths from consumption, 16; pneumonia, 45. Cases of contagious disease reported during the month: Scarlet fever, 5; diphtheria, 4; small-pox, 1.

WASHINGTON.—Seattle, 70,000. Clarence A. Smith, M. D., Health Officer and Secretary, reports for March: Deaths, 78. Annual death rate per 1,000, 11.94. Deaths from consumption, 7; pneumonia, 18; diphtheria, 6. Infectious diseases reported: Diphtheria, 15; scarlatina, 11; measles, 34; typhoid fever, 4; whooping-cough, 7.

MEXICO.—Consejo Superior de Salubridad. Dr. Eduardo Licéaga, President, Mexico; Dr. José Ramirez, Secretary-General.

City of Mexico, 344,377. Bulletin reports for the month of February: 1,245 deaths, of which there were from typhus fever 37; small-pox, 8; measles, 18; whooping-cough, 12; diarrhœal diseases, 177; tuberculosis, 109; pneumonia, 126; broncho-pneumonia, 47; bronchitis, 148; congestion of the lungs, 22. Annual death rate per 1,000 population, 42.8.

OBITUARY.

M. DE PIETRA SANTA, editor-in-chief of the "Journal d'Hygiene," Chevalier de la Légion d'Honneur, Secrétaire de la Société Française d'Hygiène, died at Saint Cloud, January 25, 1898, from an acute attack of broncho-pneumonia.

He was born in Ajaccio, Corsica, on the 24th of June, 1820. He was a near relative of Napoleon and an intimate friend of Napoleon III.

He obtained his degree of Bachelor of Arts in Marseilles and then went to Pisa, in Italy, where he studied medicine, but he finished at the Ecole de Médecine of Montpellier, and contributed for his diploma a remarkable thesis on Climatology. From this dates his predilection for climatology and hygiene.

He went subsequently to Paris, where he filled the position of secretary to the old king Jerome of Westphalia, and also of physician to his son, Prince Napoleon.

In 1868, at the suggestion of Larrey, and with the approval of

M. Rouher, he was appointed physician to the Emperor Napoleon III., which position he filled until the 4th of September, 1870. Dr. Pietra Santa took a very active part in the progress of hygiene in all its forms.

He contributed many valuable articles on climatology, etiology of disease, the therapeutics of intermittent fever, the influence of warm climates on tuberculosis, etc.

He was among the first to advocate cremation, but he met with much opposition from many sources, and he endeavored especially to reconcile the practice with his religious principles.

He was a warm advocate of prison reform, and particularly advocated the abolition of solitary confinement, a practice so bitterly complained of to-day in the State of New York and so much at variance with the healthful influence of prison discipline. In this course he was supported by M. Grevy and many other prominent men. His studies on the subject are frequently cited in the legislative chamber whenever the subject of prison discipline is discussed.

The government sent him on a scientific mission to study the climate of the South of France, Algiers and Corsica. Four volumes were the result of his investigations: "The Climate of the South of France;" "The Climate of Corsica and the Station of Ajaccio;" "Les Eaux Bonnes;" "The Climate of Algiers and Affections of the Chest," which together form the basis of his contributions to climatology.

In 1876 he commenced the publication of the "Journal d'Hygiène," which has continued to be the warm advocate of all the measures of sanitary reform that have been proposed in any country in Europe, but especially in France and in England.

In 1877, with the help of some of his devoted friends, he organized the Société Française d'Hygiène, the first institution of the kind organized in France.

M. Pietra Santa has published much on the subjects that relate mostly to public health, among them: "The Influence of Warm Climates on the Progress of Tuberculosis;" "An Essay on Climatology, Theoretical and Practical;" "A Treatise on Phthisis Pulmonalis"—the conclusions of the author regarding the treatment of this formidable disease were accepted by the great majority of physicians.

The benefit resulting from his extended labors was well known in England, and as fully appreciated in London as in Paris.

BOOK REVIEWS.

ENGLISH SANITARY INSTITUTIONS.—Reviewed in their Course of Development, and in some of their Political and Social Relations, by SIR JOHN SIMON, K. C. B., Consulting Surgeon and Past Senior Surgeon to St. Thomas Hospital; Fellow and Past President of the Royal College of Surgeons of England; Fellow and Past Vice-President of the Royal Society; Past President (now Hon. Member) of the Pathological Society of London; D. C. L., Oxf.; LL.D., Camb. and Edin.; M. D., Hon., Dublin; M. Chiv. D. Hon., Munich, etc., etc., etc. Formerly the Medical Officer of Her Majesty's Privy Council, and lately a Crown Member of the General Medical Council.

Second Edition. 8vo. Pp. 535. Price, 18s. London: Smith, Elder & Co., 15 Waterloo Place.

This edition of the most complete historical sketch of sanitation hitherto published is, the author tells us, "in substance almost textually a reprint of the edition of 1890." At various places, however, throughout the work there are brief insertions (in brackets) and foot-notes, which add to the interest of the work, and besides these there are two appendices.

The author is well known to sanitarians of long standing as the first—and for twenty-three years—Medical Officer of the Local Government Board of London; and for four years before that office was created as one of the most active members of the famous Medical Council, appointed in 1854, to investigate the conditions of cholera and other filth diseases. But the work is far from being limited to the period from that time to this, or even from the first correlation of sanitary work with English institutions, ten years before, by Edwin Chadwick, who initiated it. Nor, indeed, does it even begin with that.

The work is divided into four parts: (1) the history of sanitation from the earliest ages down through the Roman Empire to mediæval times; (2) "Post-mediæval England," i. e., legislation under the Tudors, Elizabeth, and the Stuarts; (3) "New Momenta," which brings the reader down to the reign of Queen Victoria; and (4) legislation during her reign up to 1890.

The student who would trace sanitary endeavor from the beginning and make himself familiar with its progress has but to read

the first one hundred and fifty pages of this book. He will not fail to observe that sanitary arts as the result of observation have an ancient record that compares favorably with the antecedent arts to organized knowledge in other pursuits significant of human progress. Insomuch indeed as to warrant the assertion that all along through the ages and the growth of humanities, as represented by the work before us, respect for human life—that is to say, the exercise of measures for the prevention of disease and the protection of human life—is the most striking feature and the most significant evidence of human culture. The beginning of preventive medicine on a scientific basis is shown to be closely related to the first advent of cholera to Europe, and particularly to England, in 1831. England had kept apace with other countries in statutory laws and regulations ostensibly for the protection of the public health, but they were almost wholly confined to quarantines against dangers of pestilence from abroad, for which they were always on the lookout, and with little or no regard whatever to local conditions promotive of pestilential diseases.

Early in 1831, when the danger of approaching cholera became manifest, the English government sent a medical commission to St. Petersburg to study the disease. Other efforts, besides making the quarantine rules more rigid, followed. Regulations for extreme isolation—as for plague two centuries before—were provided; and on Nov. 2 the King and Council ordered a form of prayer against the disease. Nevertheless it came. And for about three years—1831-3—there was a lavish expenditure of literature about eating and drinking, how to treat the disease, etc.

"Here ends the little there is to tell of our first British experience with cholera. * * * Before passing from the reign of William the Fourth, which gave rise to no law of direct sanitary intention, it may be noted that two of the statutes of the reign had important, though unpremeditated, sanitary results. Thus, the important *Poor Law Amendment Act of England* of 1834 deserves particular mention in this place, not because of anything of sanitary intention in the Act, but because accidentally, through the good luck that Mr. Edwin Chadwick was made the secretary of the new Poor Law Board, the Act gave occasion a few years later to a beginning of public sanitary inquiry in Great Britain."

Then follows an interesting description of Chadwick's initiatory work and the work of his lieutenants at the outset, bearing the title of "General Board of Health, yet had not a medical man

among the ordinary members or officers." But the need of medical knowledge soon became manifest. Chadwick's reports in 1842 so startled the public and Parliament with regard to the waste of human life that, by patent, May 9th, 1843, the Royal Commission, in part consisting of Mr. Henry Hobhouse, to be secretary; Mr. Lyon Playfair, Prof. Richard Owen, Dr. James Ronald Martin and Mr. Robert Stephenson were appointed for the purpose of "inquiring into the present state of large towns and populous districts in England and Wales with reference to the causes of disease among the inhabitants, and into the best means of promoting and securing the public health under the operation of the laws and regulations now in force, and the usages at present prevailing with regard to the drainage of lands, the erection, drainage and ventilation of buildings, and the supply of water in such towns and districts, whether for the protection of health or for the better protection of property from fire; and how far the public health and the condition of the poorer classes of the people in the realm and the salubrity and safety of their dwellings may be promoted by the amendment of such laws, regulations and usages." This inquiry was begun immediately. "The Commissioners, when they entered on their business, seem almost at once to have perceived that it would only end in confirming the substance of Mr. Chadwick's representations." It did. * * * "The inquiry was followed on the lines which Mr. Chadwick had already traced." The Commission's reports, 1844-45, opened up the work which England has ever since pursued, in which the author of this work has been a leader among the pioneers in its development, the foremost of its administrators, and for the last twenty-five years its most accomplished observer.

Altogether, it is a work of incomparable authenticity as a record of sanitary effort, the difficulties with which the effort has had to contend and its success in overcoming them, by the most accomplished chronicler of the subject of the period. And, as well said by the author in concluding the chapter entitled "The Growth of Humanity in British Politics": * * * "The period in its entirety deserves to be counted among the greatest in English history. In the cultivation which it gave to a sense of moral responsibility in national affairs; in the splendid instances which it showed of the applicability of common ethical arguments to politics; in the appeals which it made to the consciences of rulers and nations against courses of selfish wrong; in the feeling which it

propagated that nations, like persons, if they would not be ashamed of themselves, must obey at home and abroad the common rules of equal justice; not least in the mutual understanding which it promoted between the social instincts and the political philosophy of mankind, it represented such strides of civil culture as no former age of our country had seen—strides of a far truer civilization than any which widened empire, or enhanced luxuries of life, can pretend to show."

THE INTERNATIONAL MEDICAL ANNUAL,* 1898—announced in our February number, now to hand—is fully up to its promised excellence. Its thirty-five contributors, identified with the departments and specialties severally, have sifted and given the gist of a great amount of contemporary literature and, with singular cogency, rendered it available to the profession with the least possible labor of research. Besides this there are upward of sixty introductory articles to, and special contributions on the most recent developments in the progress of researches now in process, the several departments into which the work is divided. For example: The article on, and Atlas showing the "Bacteria Pathogenic in Man," by Samuel G. Shattock, F. R. C. S.; "Hypnotism and Suggestion," by Charles Lloyd Tuckey, M. D.; "Dictionary of New Remedies;" "Dictionary of New Treatment," etc.

Altogether, it is a handbook of great practical utility to medical practitioners in every field of view.

ALASKA, ITS NEGLECTED PAST, ITS BRILLIANT FUTURE. By Bushrod Washington James, Members of the Sons of Revolution, Pa.; Historical Society of Pennsylvania; American Academy of Political and Social Science; American Association for the Advancement of Science; American Public Health Association; Academy of the Natural Sciences, Philadelphia; The Franklin Institute; Historical and Ethnological Society, Sitka, Alaska; etc. 12mo. Pp. 444. With numerous maps and illustrations. Price, $1.50. Philadelphia: The Sunshine Publishing Co.

A timely book. Of special interest to all contemplating joining the throng bent on making their fortunes in the gold regions of the Klondike; and, besides, interesting to the friends of all such and to the public to whom Alaska and the gold fields of the Upper

*"The International Medical Annual and Practitioner's Index: A Work of Reference for Medical Practitioners." 1898. Sixteenth year. Price $3.00. New York: E. B. Treat & Co.

Yukon River are of growing importance. Many of the descriptions of scenery, the author tells us, were written on the spot, during a visit there several years ago, with warm enthusiasm for its variety and splendor, when the neglected condition of this noble possession excited his earnest concern. The book has been prepared in the hope of arousing political as well as social thoughtfulness with regard to the country, and to give some idea of its rich and important resources. The author vigorously advocates prompt and careful legislation for the protection of this great Northwest Territory, and seeks to set forth adequately his profound conviction of the grave responsibility of the Government for its development. With special reference to the gold region, much useful information is given, and much sensible advice, which intending travelers thither will do well to read. Facts needful to be known have been carefully collected from various sources, and brought together in several chapters of supplementary data, which probably will be to many the most valuable part of the volume. Taken altogether this is an excellent work—optimistic, but intelligently and impartially written, and well furnished with maps, statistics, etc., which are up to date.

PREMATURE BURIAL: FACT OR FICTION. By David Walsh, M. D., Edin. Pp. 49. New York: Wm. Wood & Co.

The object of this brochure is to controvert the arguments and so-called evidence in support of the theory that premature burial is a common occurrence. The author asserts that the whole theory of premature burial is unsupported by a single scientifically proved instance, and that the likelihood of such an occurrence is extremely small, and that popular belief of such burials is nothing more than a legend or fable. While it is undoubtedly true such burial has taken place, no thoroughly scientific man, medical or otherwise, has ever supported the proposition that it is of frequent occurrence. This subject should be of special interest to all health authorities as demonstrating the necessity of legislation in the matter of death certificates—the weak point of the law at the present time being that such certificate may be issued without inspection of the body.

CANADIAN QUARANTINE.—Report of F. Montizambert, M. D., F. R. C. S., etc., General Superintendent, for the twelve months ending Oct. 31, 1897. A pamphlet of fourteen pages, comprising a concise statement of the prevalence of quarantinable diseases

abroad during the twelve months and the status at the date of the report—there not having been any unusual incidence of such diseases in Canada during the period. On personal inspection of the quarantine stations throughout the Dominion, so far as most of the ports were concerned, the superintendent pronounces the means of protection to be satisfactory. In addition to this official inspection duty, the Superintendent availed himself of an auspicious occasion to visit the offices and laboratories of the Surgeon-General of the Marine Hospital Service at Washington and the quarantine stations of Baltimore and New York and inspect the improvements recently made in the process of disinfection.

Referring to an official report sent to him in May last by the Lieutenant-Governor of British Columbia, with regard to the practicability of *disinfection at ports of departure*, the Superintendent replies that he is

"as ever, strongly of opinion that the proper time and place for the routine disinfection of passengers and their effects, and for their vaccination, are before they board the vessel, and at the port of departure in the Orient. This properly carried out would destroy any infection many days sooner; would lessen the chance of disease during the voyage; would lessen the risk to cabin passengers of contracting disease from the steerage; and if properly certified to, might well replace any routine disinfection of healthy vessels—even during epidemics—at quarantine, and so greatly lessen interference with travel and traffic, limiting our quarantine to inspection, and the treatment of actual infection only.

"Infectious diseases prevail almost if not quite continuously in China. In Japan they are of frequent occurrence. It seems inevitable, therefore, that it will be expedient for you to require at intervals, greater or smaller, and for periods longer or shorter, the disinfection somewhere of Oriental immigrants before they are allowed to enter Canada. The carrying out of such routine disinfection at the quarantine of the port of arrival involves so much interference with travel and traffic that it seems to me to be clearly worth the while of the shipping companies to arrange for its performance at the port of departure.

"As far as I have been able to ascertain, the cost of the erection, maintenance and working of the necessary disinfecting plant at the ports of departure in the Orient could be met by the addition of somewhat less than fifty cents to the price of each emigrant's ticket. The supervisor of this disinfection in each port would, presumably, be paid by, and be responsible to, the Canadian Government. His certificates to the passengers, and tags on their luggage, could then be accepted at our quarantines, and—in the absence of actual disease during the voyage—would ensure the admission of the vessel to immediate *pratique*."

CONTEMPORARY LITERATURE.

LIFE AND HEALTH.

In the debt that is due the body it should be borne in mind that there are four periods in which it is to be paid; this varies greatly with each period, and if the payment is neglected at one time it can never be paid in the next period. Parents should also remember this, and see to it that their children should not neglect the first and most important installment, that which is due in infancy and childhood. This is a period of great activity. The tissues are watery, and the exchanges between them are carried on with ceaseless activity. The triple process, as it is called, of nutrition, function, and growth has to go on. Simple and nourishing food, freedom of action and of mind, and sunshiny happiness are nominated in the bond.

The next period, that of youth, demands also to have its charges paid. These are the proper training for the life work, whatever it is to be. The bright, buoyant nature should have its indulgence. Nothing is more saddening than to see youth too cold and calculating and worldlywise. At this time of life society is enjoyed to the full. It is the time to dance and to sing. I have often seen those who were deprived of the dancing and the social round at the time when they would have most enjoyed it—that is, from eighteen to twenty-five—and they were always dissatisfied, and felt that they had been deprived of something which they should have had, or in some instances they have developed a fondness for these things at a time when they were less appropriate.

The third period, that of adult life, is that of full development, when the individual has taken his place in the world, and counts for the full power which he is to be for himself, his family, and the community. In infancy and childhood the parent sees that the debt is paid to the body. In youth the debt is not so difficult, and there is an innate tendency to balance accounts; but it is in this active stirring time of life, when the human machine, acted upon by ambitions and consciousness of power, is driven far beyond its limits, and the result is either ruin or bankruptcy.

In the fourth period, that of advancing age, the body reckons with its owner for past as well as present indebtedness. It makes

itself felt, and is so imperative in its demands that it has to be heard. If the crippled heart, the hardening arteries, the enfeebled powers of nutrition, are not taken into account, heart-disease, apoplexy, or rheumatism carries the account up to the higher courts.—"Harper's Bazar."

THE JAPANESE HOME.

Ida Tigner Hodnett writes of "The Little Japanese at Home" in the April "St. Nicholas." The author says:

The climate, of course, varies in different parts; even in the mid-country the cold is intense in winter, and the heat intense in summer, yet both cold and heat are somewhat lessened by the surrounding ocean. To strangers it seems odd to see orange-trees bright with golden fruit, and at the same time icicles glittering in the morning sun, but this is one of the strange sights presented to the view.

In their dwellings shelter from the rain, shade from the sun, and free circulation of air are mainly sought by the Japanese, who, as a rule, seem to be able to endure much cold. Even on winter days their houses are seen entirely open to the morning sun, and in this respect they set a good example to their Western brethren. Then, too, these houses must be such as will not be readily shaken to the ground in an earthquake, for Japan is a land of earthquakes.

For security against this danger, the house is put together in a very simple way. All parts of the structure are held together, one author says, by a system of "dovetailing," neither nails nor screws being used in their production, except for ornament. It is not made fast to the ground, but stands upon wooden legs or columns, which are merely placed upon stones high enough to keep the ends out of water. Then, when an earthquake occurs, the building moves to and fro, and settles down again after the vibration has ceased. It is believed that most of the damage from earthquakes in Japanese cities has occurred with houses having tiled roofs, as the tiles are easily shaken loose, and, being heavy, cause destruction in their fall. Buildings with roofs of wood or thatch generally escape damage.

It is thought that the use of tiled roofs arose from the dread of fire. Although many roofs are made of stone tiles, the majority are of wood, bamboo, or thatch. Thatch is much used in the poorer villages; but even temples, as well as dwellings, have been known to be thatched. On the ridge of this thatched roof the iris is frequently planted; and when in bloom, its dark velvety-purple

blossoms and light green leaves give the house a picturesque appearance. Seen from a distance, the village looks as if there were little gardens on the tops of the houses.

Most dwellings are but one story high. When the roof and framework are made, it remains to arrange for the outside walls and the partitions of the rooms. Most foreigners regard the outside walls as huge windows, for they are merely light wooden lattice-work frames covered with a stiff, semi-transparent paper. These frames slide in grooves, so that they can be taken out at pleasure, leaving the whole house open to the cool breezes. At night they are covered with *amado,* or wooden shutters, which also slide in grooves along the edge of the veranda or a projection of the floor, and so shut in the house. In the daytime the shutters are pushed back so as to form ornamental sidepieces. This kind of wall and window in one is another of the needs of building in an earthquake land, where the use of glass would be dangerous and costly.

The rooms are made by means of sliding partitions of woven bamboo, or else of paper-covered latticework similar to the outside walls, fitted into grooves in the ceiling. The ceiling and all the frames for outside and inside walls are of unpainted wood, and all parts of the house are generally kept perfectly clean.

A TYPICAL EGYPTIAN VILLAGE.

R. Talbot Kelly, the English artist, has written for the April "Century" an article entitled "An Artist Among the Fellaheen." Mr. Kelly says of a typical Egyptian village:

Built entirely of sun-dried mud, the small, low huts, from considerations of economy and space, join one another whenever possible. Narrow and tortuous lanes, left at haphazard, form the only thoroughfares, in which at first appears to be a huge mound of mud, surmounted by heaps of cotton and durra stalks, which serve the dual purpose of thatch and fuel. Many of these lanes are merely culs-de-sac, ending abruptly in a neighbor's courtyard, and forcing one to retrace his steps and try again. Experience has taught me that it is never wise to assume that the streets lead in the direction at first suggested; it is often safer to start the other way, and trust to the winding of the path to bring one out somewhere near the desired spot.

As a rule, the villages have the appearance of fortifications, the outside walls being frequently without doors or windows, and the lanes of the village terminating in massive wooden doors,

which are usually closed at nightfall, and guarded on the inside by the village *guffrah*, or night-watchmen.

Each "house" has usually one door, opening into the lane, small and low; and the few windows, if provided at all, are merely slits in the mud wall, innocent of glass or shutter, but ornamented with a lattice of split bamboo, placed crosswise during building. Ventilation there is virtually none, the smoke of the fire of dung or corn-cobs finding its egress by the door, and well-nigh choking the inhabitants, which include not only the family, but chickens, turkeys, pigeons, goats, and whatever live stock the inhabitants possess.

Every effort to exclude air seems to be made, the houses being too low to feel the breezes, and the streets too narrow to allow of any air circulation. The roofs, covered with piles of rubbish for fuel, afford accommodation for a second installment of goats, pigeons, cats, and especially dogs. One wonders how life can be supported in such conditions; yet the people are well-conditioned and healthy, living their lives in the fields, and returning to their houses only to eat and sleep. Insect life naturally abounds, the Egyptian flea particularly being a prodigy of manly vigor and activity; but the Fellah has a hide like a *gamoos* (the Egyptian buffalo), and even travelers like myself eventually become impervious to its onslaught. Outside the village, and almost at their very doors, the filth and offal of the place are deposited, resulting in the development of that plague peculiar to Egyptian life—"flies"—disgusting, but very necessary as scavengers, without which and the equally valuable rat these villages would quickly become uninhabitable.

PROF. FERDINAND HUPPE, the well-known Professor of Hygiene in the University of Prague, contributes an interesting and important article to the April "Monist" on THE CAUSES OF INFECTIOUS DISEASES. Prof. Hüppe is a bacteriologist of the modern school, but nevertheless opposes the main doctrines of Koch, Pasteur, and Virchow, and few will dissent from the reasonableness of the position he takes, which harmonizes the facts of the news theories with the established principles of the old. Both physicians and laymen will be interested in Prof. Hüppe's presentation of modern bacteriology.

AMERICA'S LATENT POWER.

The quickness and inventiveness of American mechanics, engineers, and manufacturers have no parallel in Europe. On a

year's notice the United States might undertake to cope even-handed with either the Dual or the Triple Alliance—although we have now only the nucleus of an army and the beginning of a navy, while the European powers have made war preparation their principal business for a whole generation. It is to be suspected that one reason why the American people have bought the newspapers so eagerly during the past weeks is to be found in the satisfaction they have taken in learning how a strictly peaceful nation like ours could if necessary reverse the process by beating swords into plowshares. It is true, for example, that we have built only a few torpedo boats and only a few vessels of the type known as destroyers; but we have discovered that about a hundred very rich Americans had been amusing themselves within the past few years by building or buying splendid ocean-going, steel-built steam yachts of high speed and staunch qualities, capable of being quickly transformed into naval dispatch-boats or armored and fitted with torpedo tubes. Probably not a single private Spanish citizen could turn over to his government such a vessel as the magnificent Goelet yacht, the Mayflower, which was secured by our Navy Department on March 16; not to mention scores of other private steam yachts of great size and strength that wealthy American citizens are ready to offer if needed.—From "The Progress of the World," in "American Monthly Review of Reviews" for April.

The principal contributed article in the "American Monthly Review of Reviews" for April is entitled "Political Germany," and was written expressly for the "American Monthly" by Dr. Theodor Barth, the eminent German publicist, leader of the Liberals in the Reichstag, and editor of the "Nation." Dr. Barth is well known in the United States, having frequently visited here. His article is illustrated with the portraits of all the representative leaders in modern German politics, and is altogether the most complete and lucid exposition of the latest problems and policies of German statesmanship that has yet appeared.

EVOLUTION AND TELEOLOGY.

"To suppose that simple brute matter could, by its own motion or by any power inherent in matter as such, have been the sole efficient cause of the evolution of organic from inorganic matter, of the higher from the lower forms of life, of the rational from the irrational creature, is to suppose that a thing can give what it does not possess, that the greater is contained in the less, the superior in the inferior, the whole in a part."

Still another difficulty for the opponents of teleology arises from their inability to understand the purpose of many things in nature. This, however, far from being an objection to the argument from design, should only make one more conscious of his ignorance, and of the limitation of human knowledge. If we can discern manifest evidence of design—and this no reasonable man can deny—in even a few things, and if, of the manifold purposes exhibited in any given object, we can discover but one, we have evidence which is quite sufficient for the validity of the design-argument, and quite sufficient, likewise, to meet all the requirements of the teleologist.—From "Evolution and Teleology," by Rev. J. A. Zahm, in "Appletons' Popular Science Monthly" for April.

THE TWO LOBES OF THE BRAIN.

In the ordinary working of the brain one half is more active than the other, and exercises a superiority on its neighbor lobe. This lobe—in ordinary persons the left, of course—is the cerebral master. Heredity, education, or what we will—all the combined influences, in short, which mould human life—have tended, by some process of physiological selection, to place one lobe over the other in point of importance. The other (right) lobe is the servant to the left in a measure. Its education has been neglected, and it requires the control of its better-cultivated neighbor in order that life may be conducted in a sensible and sane fashion. The most hopeless cases of insanity, Wigan would have held, would be those in which both hemispheres were affected. If one was alone ailing, the other might exert more or less control over it, and the extent of the control would depend on which lobe exhibited the diseased action. All degrees of insanity or mental derangement could thus be accounted for on this supposition of the relative control of one hemisphere by the other. The perfect life is that in which the better and higher half controls the weaker and less responsible.—From "Some Byways of the Brain," by Andrew Wilson, M. D., in "Harper's Magazine" for April.

In the "North American Review" for April, Langdon Kain, M. D., writes of "Man's Span of Life," showing that while the effect of advanced civilization is to lower the death rate, it has also increased the percentage of persons of great age. Dr. Kain narrates many remarkable instances of longevity, at the same time deploring the absence of trustworthy vital statistics in connection with the pursuit of this subject.

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CLIMATE, HEALTH RESORTS AND SPAS OF CANADA.*

By T. G. RODDICK, M. D., M. P.,

President of the British Medical Association.

CLIMATIC CONDITIONS.

As it may be presumed that to many of those present here to-day Canada is almost an unknown country, I have thought that among one or two other subjects a few remarks on the atmospheric conditions and health resorts of the Dominion would not be without interest.

The best way to understand the atmospheric conditions of a country is first to understand its physical features. The physical features of Canada are very remarkable. Broadly speaking, the country is separable by climatic and physical conditions into three great regions, the Eastern, Central, and Western Regions, which approximately run north and south in the general trend of the continent. The Eastern Region, which includes the older provinces of the Dominion, Ontario, Quebec, Nova Scotia, New Brunswick, and Prince Edward Island, besides the great fur territory stretching far to the east and northeast of James' Bay, extends from the Atlantic to Lake Superior and the chain of Great Lakes running in a northerly direction from Lake Superior to the Arctic Ocean. Between this great chain of lakes and the eastern base of the Rocky Mountains is the immense interior continental plain which constitutes the Central Region of Canada, its southern part con-

*Abstract of the Presidential Address at the meeting of the British Medical Association in Montreal, August 31, 1897. From *Montreal Medical Journal.*

sisting of open prairie, its northern part of forest lands. The third part of the division, the Western Region, is naturally very well defined, consisting of the wide and wild mountainous border of the continent on the Pacific side—the Rocky, Selkirk, and Gold Ranges, which form the great Cordilleran belt, whose average width in Canada is 400 miles.

Eastern Canada, our first and largest region, is geologically of very ancient origin. Here geologists have placed the nucleus of the continent—the broad belt of crystalline rock of great antiquity called the Laurentian Plateau. This region is remarkable for its immense number of lakes, large and small, and for its irregular and winding rivers with numerous rapids and falls. Between the Laurentian Plateau on the north and the Appalachian mountain system on the south lies the great valley of the River St. Lawrence. The basin of this majestic river covers 530,000 square miles, of which 460,000 are in Canada. Above the city of Quebec, the base of the Laurentian highlands and the ridges of the Appalachian system diverge, and the mighty river flows through an extensive low country of notable fertility, in earlier days the great granary of Canada.

It may be added *en passant* that Mount Royal, which gives such distinction and character to our city, represents the basal remnants of a volcanic vent of great antiquity. From its picturesque summit may be seen similar abrupt elevations far off toward the east and south—Montarville, Belœil or St. Hilaire, Mt. Rougemont with Mt. Yamaska behind it, Mt. Shefford, and the conical Mt. Johnson or Monnoir. The Adirondacks are visible in the distance to the southwest, and the Green Mountains to the southeast.

Included in the Eastern Region is one of the most remarkable geographical features of Canada—the great fresh-water lakes or inland seas, Superior, Huron, Erie, and Ontario, which form the perennial reservoirs of the St. Lawrence. Together with Lake Michigan, which is wholly in the United States, they have an aggregate area of 94,750 square miles, an area larger than that of Great Britain. They stand at four distinct levels above the sea—Ontario 247 feet, Erie 573, Huron 581, and Superior 602. The Niagara Falls, the greatest and most impressive of the natural wonders of our continent, are the direct result of the great height of Lake Erie above Lake Ontario, the river connecting the lakes being only a few miles long. Besides the St. Lawrence, Eastern

Canada has several other great rivers, notably the Ottawa, which has a course of 1,800 miles and a basin of nearly 1,000,000 square miles, the St. Maurice, the Saguenay, and the St. John, the glory of New Brunswick, which, together with the Atlantic Slope, has a basin of 50,214 square miles. The Central and Western Regions also have their abundant share of large and small lakes and great rivers, an account of which would fill reams of paper. It should be noted that the Canadian rivers and lakes collectively cover an area of 130,000 square miles, and contain one-half the fresh water on the globe.

I draw special attention to this series of vast lakes and rivers because it exerts an immense and beneficent influence on the climate of Canada. It preserves the mean temperature while the land experiences the extremes. In summer the water is cooler and in winter warmer than the land conditions, which tend to modify the differences and to favor uniformity of climate. Without these waters, too, we should have vast regions of comparatively little value, as in Africa, Asia, and in the United States west of the Mississippi River, where large tracts of land far from water are nothing more than arid wastes. Our climate is more uniform than that of Europe; the meteorological differences are produced by position alone, but Europe has a higher mean temperature, and the extremes there are not so marked or so wide apart as in Canada. Owing to the great area of Canada, extending over 20° of latitude, or from the latitude of Constantinople to that of the North Cape in Norway, the range of temperature is naturally very wide. The southern boundary stretches over fully 4,000 miles, along which line we find that Southern Ontario has the latitude of Central Italy, Nova Scotia that of Northern Italy, Manitoba and Vancouver that of Central Germany. Speaking generally, the Canadian summer may be stated at 60° F. to 70° F.

From its vast and varied extent, Canada may be said to be the possessor of several climates. Taking Solly's classification as to position, we have in Canada all the three land climates, the low, the medium, and the high. The first has an elevation up to 2,500 feet, the second up to 4,500, and the third from 4,500 upward. As to temperature and humidity, Canada comes under the category of "cold, moderate, and dry."

HEALTH RESORTS.

In the eastern region of the Dominion there are at least two localities which have been proved to possess many of the qualities

which constitute a climate for convalescents from fevers and other depressing diseases, and also for consumption in the insipient stage. I refer to the region in the Province of Quebec among the Laurentians north of this city, of which the village of Ste. Agathe is the centre; the other being the Muskoka District in Ontario.

The first has been called the Adirondacks of Canada, having many of the features, physical and climatic, of that now celebrated plateau situated in the northeastern part of New York State, and stretching from the Mohawk Valley in the south 150 miles north, almost to the frontier line. The average elevation of the two regions is about the same, being from 1,600 to 1,800 feet. The immense pine forests, together with the moderate temperature, constitute the chief characteristics of the Canadian district, from the medical point of view. No very systematic meteorological observations have yet been taken of the Ste. Agathe region, but the indications will probably prove to be very similar to those of the American resort. It is in contemplation to erect a Sanitarium on Trembling Mountain, overlooking the village of Ste. Agathe, which will doubtless in time rival the Adirondack Cottage Sanitarium near Saranac Lake Village, which has proved such a marked success under the able management of Dr. E. L. Trudeau. The elevation of the Sanitarium will be 2,500 feet, thus having an altitude of nearly 700 feet greater than the establishment at Saranac. It is the intention of the Quebec government to set apart a sufficient portion of the Crown Lands to form a natural park in that part of the Province. It will be called the Trembling Mountain Park, and will cover an area of 100,000 acres of land, in which are several lakes. Within the boundaries of this park the Sanitarium will be constructed. There is therefore no reason to doubt that we shall shortly have within our own lines a health resort possessing all the advantages of the Adirondacks region, and capable of affecting for good the same class of patients now so decidedly benefited by a residence in those mountains.

One hundred miles north of Toronto, in the highlands of Ontario, is the Muskoka Lake region, an area of about 10,000 square miles, perhaps the most picturesque portion of the whole Province. Within this district, which has a mean altitude above the sea of about 800 feet (200 feet above Lake Huron), there are nearly a thousand lakes and ponds, connected by innumerable streams. The chief lakes are Muskoka, Rosseau, and Joseph. These con-

tain about 400 islands. It is a region abounding in pine forests; the climate is dry, and the air pure and invigorating. The Muskoka region has been found undoubtedly to possess remarkable climatic advantages for those with phthisical tendencies. The death-rate from phthisis in this section of Ontario is proved to be less than one-tenth the rate which obtains in other parts of the Province. At Gravenhurst the Muskoka Cottage Sanitarium for the cure of insipient phthisis has recently been founded, under the best auspices, with accommodation for forty patients. The present Sanitarium consists of a large and well-planned main building, surrounded within easy distance by a number of small cottages. The grounds, which embrace seventy-five acres, are situated on Lake Muskoka. Pine forests and rocky ridges protect the buildings on the north and west sides, whence come the colder winds in winter. Like the Adirondacks Sanitarium, the intention is to occupy it all the year round. The progress of this institution, at present in the experimental stage, will be watched with much interest.

In the Central Region of Canada, that section of the Northwest Territories known as Southern Alberta—the home of the cowboy—has much to recommend it as a health resort. This strip of prairie and hill country is bounded on the north by the Canadian Pacific Railway, and on the south by the International boundary line; its eastern boundary extends as far as Medicine Hat; its western boundary to the summit line of the Rockies and British Columbia, comprising in all an area of about 20,000 square miles. The plain here has an elevation above sea-level of 2,700 feet, which gradually increases up to the entrance of the Crow's Nest Pass, where the elevation is 4,500 feet. Calgary, the capital of Alberta, is itself 3,500 feet above sea-level. With this gradual incline from a low to a high level altitude the patient can choose the locality which suits his particular case. In a long experience Kennedy knew of only two cases of phthisis originating in that country—one of acute tuberculosis with a strong hereditary taint, which proved fatal; the other, of the ordinary type, recovered without leaving the place. He claims for the climate of Southern Alberta a dry asceptic atmosphere and a dry soil, the greatest possible number of sunshiny days (90 per cent.), with cool nights. Patients can live there all the year round, and with the exception of an occasional snowstorm, which may cover the prairie to a varying depth, nothing need interfere with their practically

living in the saddle. The so-called Chinook wind has a remarkable influence over all this western section of Canada. It is a warm wind which blows with varying intensity from west to southwest. McCaul, who describes it very graphically, speaks of its approach being heralded by the massing of dark clouds above the mountain tops, and a distinct wailing and rumbling from the passes and gorges. Its effect in winter is little short of miraculous. When the real Chinook blows the temperature often rises in a few hours from 20° below to 40° above zero. The snow, which in the morning may have been a foot deep, disappears, and before night everything is dripping. But in the space of a single day all the water is lapped up by the thirsty wind, and the prairie is so dry that a horse's hoof hardly makes an impression.

The cases which have been most especially benefited by Alberta's climate are pulmonary tuberculosis in the earliest stage, although neurasthenics and anæmic women are likewise favorably affected to a marked degree. It is well known that delicate lads sent from the British Isles to this section of the Northwest to work on the cattle ranches become in a year or two healthy and vigorous men, and are scarcely recognized on their return.

Still farther west, and nearly midway between Calgary and the Pacific Coast, is the beautiful Valley of Kamloops, another all-the-year-round resort which has much to commend it to those suffering from many forms of tuberculous disease. This picturesque valley, which lies between the Rocky Mountains and the Cascade Range, has a low altitude climate of 1,100 feet, but is exceedingly dry, showing an annual rainfall of only 11.05 inches, with an average of about 75 rainy days in the year. The rain soon disappears, the soil being light and gravelly. In this region we have an illustration of the local variability of climate recently pointed out by Bryce, who, in referring to the two not very distant localities of Vancouver and Kamloops, showed that whereas the former has an annual rainfall of 35 inches, the latter records but 11 inches and a decimal. The mean annual temperature of the Valley of Kamloops is 46.03° F., the annual range being only 22.8. The tuberculous patients who appear to be most benefited by a residence in Kamloops are those in whom there is a tendency to chronic congestion. Cases of bronchitis are likewise said to do well there. The climate can also be recommended for consumptives in whom cardiac disease exists as a complication.

THE EFFECT OF THE CANADIAN CLIMATE ON EUROPEAN RACES.

That Canada is an exceptionally healthful country is the general testimony of the army and navy surgeons who have been stationed in Canada with the different regiments from the time of the conquest to the present day. Crawford, who was attached to one of the regiments stationed in Montreal many years ago, and who subsequently left the army and practised in this city, published elaborate and carefully collected statistics to prove that few portions of the British Empire have a climate equal to that of Canada. In fact his statistics prove conclusively that out of every 1,000 of the troops stationed at the various garrisons throughout the Empire, the percentage constantly ineffective from sickness was smaller in this country by 7 per cent. than at Gibraltar, which was then taken as the type. I think it can be satisfactorily proved that Canada is expressly fitted to develop a hardy race capable of great endurance. The races of the British Isles and the French race have certainly not degenerated here. Hingston proved this very conclusively some years ago by observations made upon the medical students attending the various schools in this city. He found that the lumbar strength of the British Canadian of the third generation exceeded by 20 pounds that of the recently arrived English and Scotch students. But the French-Canadian of the tenth generation did better than all by nearly 30 pounds. Not only has the French-Canadian increased in strength, but also in height and weight over the original Normandy stock.

Has the intellectual improvement in our people kept pace with the physical? We are a modest people, but I think we can say with truth that it has. We have a very respectable literature of our own, but the best intellect of the country is as yet absorbed in the practical affairs of life, and has too seldom found expression in art and literature. It is not very long since a distinguished American litterateur, Charles Dudley Warner, gravely attributed what he called the literary inactivity of Canada to the coldness of the climate. He said, in short, that the cold benumbed our intellectual faculties, and we had to spend so much of our energy in trying to keep warm that none was left for any other purpose. It must be admitted that if we measure the intellectual capacity of our people by the number of books produced in Canada the result is not all we might desire; but the climate is not to blame. Especially is it not the cold, for the winter is the season devoted

pre-eminently to intellectual effort and intellectual amusements. If Mr. Warner had said that the heat of our summer was an unfavorable factor in our intellectual life he would not have shot quite so wide of the mark; he would not have been right, but he would not have been quite so wrong. The very vicissitudes of our climate, by training the system to endure severe physical conditions, must react favorably upon the mental attitude.

CANADIAN SPAS.

We have in Canada several mineral springs of undoubted therapeutic value, and they are pretty generally distributed all over the Dominion, although differing materially in temperature and composition. The best known Canadian spas are the Caledonia, the St. Leon, and the Plantagenet Springs, in the Province of Quebec, and the Banff Springs in Alberta. Other springs in the Province of Quebec are the Abenakis and the Caxton. Besides these there are at least three or four artesian wells or springs. Of these the chief are the Laurentian Spring in the east end of the city (a mild alkaline water with sodium bicarbonate as its predominating ingredient), and the Radnor, a well of some considerable repute situated in the County of Champlain. This was discovered a very few years ago when boring for water to supply the workpeople engaged at the well-known Radnor Forges. It has been likened to the German seltzer, many of the properties being alike. It bids fair to become a rival in time of the celebrated Apollinaris water, to which it is preferred by many. The well is over 400 feet in depth. In the Province of Ontario the chief springs are the Winchester and the Preston, and those in the town of St. Catherines, near Niagara Falls. The best known and the most popular are the Caledonia Springs, situated on the line of the Canadian Pacific Railway about midway between Montreal and Ottawa, and about nine miles from the Ottawa River. They consist of four springs—the gas, the saline, the white sulphur, and the intermitting or Duncan spring. The first three are situated within a distance of three or four rods of each other, and the mouths of the latter two are not more than four feet apart. The intermitting spring is situated about two miles from the others. This is so named because the discharge of gas is not regular, some minutes elapsing between the periods of quiescence and disturbance. The average temperature of these springs is

about 46° F. The intermitting spring has the largest percentage of chloride of sodium, and differs from all the others in possessing a greater portion of chlorides of calcium and magnesium. It has also nearly twice the proportion of carbonate of magnesium that the others contain. It has been found that, taken judiciously and under advice, these waters have a remarkable effect in subacute and chronic rheumatic conditions. People suffering thus are found flocking to Caledonia from all parts of this continent and even South America, especially during the months of July and August. Gouty conditions depending upon liver disturbances also yield very readily to these waters. The waters of St. Leon and Plantagenet are similar in many respects to those just described, and as a rule suit the same class of patients.

All the springs so far mentioned yield cold water. But Canada also possesses the most famous thermal springs on this continent.

Banff, now a picturesque town magnificently situated in the heart of the Rocky Mountains yet within the limits of that division of the Northwest Territories known as Alberta, has become one of our noted health resorts, although frequented more on account of its remarkable thermal springs than for its climatic advantages. The town is built on the banks of the Bow and Spray rivers, two large glacier streams, and is surrounded by mountains towering many thousands of feet above the level of the sea. The winter is short, beginning in December and ending in February, and is much milder than Ontario. Very little rain falls, and the days as a rule are bright and cloudless. Prolonged periods of warm weather are experienced during winter. March and April are variable; May is warm and bright; June is the month in which the largest rainfall occurs; July, August, September, and October are very warm and very dry, with cool nights. At all seasons, with the exception, perhaps, of June, the air is dry and notably aseptic. It is positively stated that no case of malaria or tuberculosis has ever been known to originate at Banff. Independently of the springs, then, Banff has much to recommend it from a climatological standpoint.

The far-famed Thermal Springs, of Banff, were only discovered some fifteen years ago, during the construction of the Canadian Pacific Railway. At its source in the mountain side it has a temperature of 127° F. and the air is charged for some distance around with the steam emitted from the pool to which the water

flows. The most recent analysis shows it to contain the following ingredients:

Calcium sulphate	56.85
Magnesium sulphate	12.39
Calcium carbonate	3.29
Sodium sulphate	15.60
Sodium carbonate	35.73
Silica	traces.
Organic matter	traces.

The waters of Banff have been used with great benefit in rheumatism, gout, sciatica, and glandular affections, in certain forms of skin disease, and especially, it is thought, in tuberculous affections of the skin and mucous membrane. Aided by the admirable climatic conditions the waters have also been found to benefit in a marked manner functional diseases of the liver, stomach, and kidneys, and tuberculous joint affections. In constitutions debilitated from any cause the activity of the skin is noticed to be increased, the heart and vascular system strengthened and the muscular and nervous systems much improved in tone. Rachitic and delicate children are much benefited by the Thermal Springs. This seems a large order; but the therapeutic effects of these springs have been carefully studied by competent medical men who have been stationed there for some years. The climate doubtless assists materially the action of the waters in very many cases.

I doubt if the Canadian profession sets a sufficiently high value on the therapeutic properties of our own mineral springs. When visiting the spas of Great Britain and Europe, one is impressed by the caution exercised by patients in the method of using the waters which have been prescribed. There, competent local medical men are always to be found who can give the proper advice regarding the water to be taken for the ailment from which the patient suffers, and the judicious use of baths. Here, unfortunately, in many places no professional advice is available, and the patient consequently does very much as he pleases, or as the hotel proprietor may advise, and in consequence more harm than good sometimes follows the use of the waters.

LORD CHESTERFIELD being given to understand that he would die by inches, very philosophically replied, "If that be the case, I am happy that I am not so tall as Sir Thomas Robinson."

IMPORTANCE OF SANITARIA FOR THE TREATMENT AND PREVENTION OF TUBERCULOSIS—A SUGGESTED LOCALITY FOR NEW YORK.

By HAROLD BRYN, M. D.

Sanitaria for the early treatment of tuberculosis will soon become more common. Experience has shown that fresh air is the most potent factor in the treatment of this heretofore so much dreaded disease. Affections in the larynx, in properly selected localities, are now cured in a short time by local treatment, while the disease in large cities seems to be nearly incurable.

Tuberculous affections of the larynx are much more frequent than they were formerly supposed to be. Formerly, when pain and hoarseness occurred, the larynx was examined and treated, but then it was often too late. Now, in Falkenstein, the larynx is always promptly examined on complaint, and the result is that 50 to 75 per cent. of the cases are found with affections of the larynx, instead of, as before, 15 to 25 per cent. The important point is to recognize the early changes as really tuberculous. A seemingly common laryngitis, a grayish-yellow wrinkling at the posterior wall, a circumscribed redness on one of the vocal cords, a superficial ulceration—these are the first signs which a consumptive will show whose larynx has been attacked by the disease. The patient himself, at this time, can give no information as to the nature of the disease; it is only by the laryngoscope that it is possible to discover it. But often an examination will reveal much more—large ulcerations will sometimes be seen, and the patient even then can speak with a clear voice and suffer no pain.

Tuberculous affections of the larynx begin most frequently under the appearance of a common catarrhal laryngitis; often the posterior wall is wrinkled and of a yellowish-gray color. Now, such a condition of the larynx does not signify in itself that it is of tuberculous character. But if the same patient has tuberculous lungs the symptoms in the larynx will allow us to conclude that these symptoms also are tuberculous. Yet the diagnosis is more certain if a circumscribed redness on one of the vocal cords can be seen. If a patient with such a larynx gets fresh air, is a total abstainer from alcohol and tobacco, spares his voice and is treated with insufflations of yodol, sozoiodolzink, boric acid or menthol, he

may be easily cured of the laryngeal affection, even if the lungs are not cured.

If the disease has already affected the epithelium a 25 per cent. solution of lactic acid may be applied with good effect.

Superficial erosions will most frequently yield to a 50 per cent. lactic acid application. But deeper ulcerations must first be curetted and then pencilled with a 50 per cent. solution of lactic acid. Cocaine should always be applied before the pencilling or curetting. Tuberculous tumors will most frequently be seen on the false cords, and must be extirpated.

In the modern sanitaria for tuberculosis there will then be need of specialists in laryngology.

As the treatment of incipient tuberculosis continues to progress and the people learn to understand that it will be in our power to nearly stamp out this much dreaded plague, they will also, we hope, be more willing to avail themselves of properly located sanitaria. That the needed money for providing them will be given there is no reason to fear. All agree now that the establishment of such institutions would be a public benefit; that there would be a saving of money as well as of life by their use. Many families are now supported by the public and are a burden on the community because the heads of them have been prematurely carried to their graves, instead of being rescued by appropriate and timely care, by which they would have been restored to health and ability to support families.

The chief difficulty to be contended with is to get the infected persons to sacrifice their home comforts for the benefit of their families and the public. To tell a mother with a dear husband and small children that she must leave them at least for some months to effect a cure of her lung trouble will be of little or no use. She will not leave them; she will send for another doctor, who, perchance, will tell her that she may be cured in a reasonably short time even by staying at home, and that if she takes care of the sputa she can avoid the danger of infecting her relatives. Add to this that so long as she is not wholly unable to work it will be cheaper to be treated at home. By strict laws to force them out of the city they will only be forced from the care of competent physicians to the quacks.

Our hope, then, is based upon so educating people with regard to the communicability of tuberculosis that those who may unfortunately be so afflicted will be forced by their own consciences to gladly shrink from the dangers of communicating it to those

whom they love, or to endanger the public, and to do that which for the moment may seem very hard—to leave their home surroundings for a time and enter a sanitarium for greatly improved conditions promotive of their own recovery from the disease and the certainty of not communicating it to other persons.

Brooklyn is fortunate in having in its immediate neighborhood one of the best of localities for such a sanitarium—the great pine region of Brentwood, where an area of many square miles is covered with pine forests. Brooklyn physicians are well aware of the healthfulness of this region; it is scarcely equalled elsewhere in the State. The soil here is of sand and gravel, giving excellent drainage. There is no malaria, and the water supply is pure and abundant. The pine forest is so extensive (about fifty miles length by six miles breadth) as to afford protection against keen winds and fog. The prevailing winds are from the ocean, coming from the south and southwest, and thereby the temperature of this portion of the island is several degrees warmer in winter and cooler in summer than that of the mainland. Here, then, we have on the one side the refreshing ocean air, rich in ozone, commingled with the peculiar, health-giving air sifted through the pine forest. It would be an enterprise eminently worthy of the city of Greater New York to buy a sufficiently large portion of this forest for a sanitary park.

The Brehmer-Dettweiler Mode of Treating Tuberculosis in Sanitaria.—Brehmer lays much stress on the situation of the sanitarium. "It should be at a certain height above the level of the sea, with air free from dust and of sufficient rarity, and of low register of the barometer, coolness, with strong sunshine, and considerable ozone." His demand in Germany is for a height of 500 metres, in Switzerland 1,500 to 1,700 metres, and on the equator 3,000 to 4,000 metres.

Dettweiler lays most stress on pure air; less on the height above the level of the sea.

Brehmer thinks the essential requisite is to remain in free air in large parks, protected against the wind, "as wind is the real poison for the sick," in combination with promenades on hilly roads accurately adapted for every class of cases, and specially to strengthen the heart.

Dettweiler attaches more importance to the "reclining cure" in "reclining halls." In the recumbent position he thinks that nourishment takes place more easily, and supposes that more blood reaches the apex of the lung in that position.

These reclining halls and reclining pavilions are mostly in direct connection with the main building, but some of them are situated in the parks. They are built like a regular veranda, with roof and back and both sides closed. The façade always faces the south, but is protected against direct sunshine with canvas.

In every place, in the corridors, stairs, bedrooms, even out in the parks, are placed spittoons, and every patient has his own cuspador.

Every patient is required to get up early and immediately take the first breakfast. After this a physician administers a cold douche of five to twenty seconds' duration.

After every meal, except the dinner, they have to walk for half an hour. The rest of the day is occupied by resting on the chairs in the "reclining halls." The reclining chairs are of wood or bamboo, and covered with a blanket. Every five or ten minutes the patient takes ten or twelve full inspirations with the mouth closed. Physical exercise or reading is allowed. In foggy, rainy, snowy or cold weather (until the thermometer reaches 12° Celsius) the patients remain within during the usual time.

When out walking they stop after 100 to 200 paces and take five to six full inspirations. If any one perspires he goes back immediately and puts on dry clothes. He must never go to the reclining halls when sweating. He must try to master the coughing, and if obliged to he should try to breathe through the nose during the coughing. The nourishment shall always be abundant and contain much fat. The first breakfast, at eight o'clock, consists of coffee, tea, chocolate or milk, with bread, unsalted butter and honey. The second breakfast, at ten o'clock, consists of milk and sandwiches with cold dishes, sometimes broth with Liebig's extract or Kefir—if milk does not agree with the patient. Dinner at one o'clock, with many different dishes and wine, beer and cognac and coffee. Supper, at seven o'clock, consists of soup, warm and cold dishes and vegetables. Milk is given in extra portions in the afternoon and at bedtime. No special caution in boiling the milk is taken, neither are the cows tested for tuberculin (in those places the cows are seldom tuberculous).

"Medicamina specifica" are seldom used. Expectorants and codeia are given to prevent severe coughing; phenacetin and antifebrin are given in fever; ice over the heart in specially high fever; against nightsweats cognac at bedtime or dusk, or washing with alcohol. In case of hæmoptysis ice, codeia and ergot.

Brooklyn, N. Y., May 5, 1898. HAROLD BRYN.

THE BENEFIT OF WATER FILTRATION—ILLUSTRATIVE EXAMPLES.*

By JOHN W. HILL, C. E., of Cincinnati, O.

In view of the absolute necessity of water to the animal system, is it not singular how little we know of it? Those who have given the matter most thought can only sketch the faint outlines of a picture, the details of which time alone can fill in. With all the strides which have been made in chemical, biological and bacteriological investigation of water supplies we seem only to be at the threshold of the revelations which are possible in this field. Nature has intended that we should be supplied with pure water, but nature in this as in many other matters has had its purpose thwarted by the ignorance or indifference of man.

The best informed sanitarians of Germany are firm believers in the water transmission of certain diseases, chief of which are typhoid fever and cholera, and visitors from the United States to that country, who may be interested in the hygiene of water, are reminded of the fact in certain cities of Germany, where the water supplies are known to be of very excellent qualities, typhoid fever is scarcely known. Dr. William Osler, of the Johns Hopkins University, Baltimore, is authority for the statement that typhoid fever is so rare in Munich that enough cases cannot be had to illustrate the disease in the hospital clinics. Unfortunately, no large city in the United States can boast of a lack of typhoid fever.

Epidemics of typhoid have been traced to polluted water, but they are more often traced to some other dietetic substance, such as milk, oysters, water cress, etc., but in nearly every instance the source of the infection is something that has acquired its virulence from water or sewage. It is possible that the typhoid bacillus and other bacteria of sewage origin may survive for a length of time in a sewage polluted soil, but it is antagonistic to our general knowledge of this and the bacilli of nitrification to suppose that two organisms of such opposite tendencies could survive in a soil where vegetation was in progress.

*Abstract of Address before the Araphoe and Denver Medical Society, at Denver Col., March 8, 1898.

The evidence to shake our belief in the water transmission of this disease is very meager, while upon the other hand in cities like Munich, where a very excellent water supply has been substituted for a supply known to be polluted by sewage, the typhoid fever rates have quickly fallen to a small percentage of those which prevailed before. These reductions, simply by changes in the character of the water supply to a city, have been so great as 85 to 90 per cent., and even if the remaining typhoid cannot be charged to water, it is obvious that water is responsible for the larger percentage of the cases and death rates from this disease. The colon bacillus is always in the human intestines, and if it is the primary form of the typical typhoid germ, why is it necessary to look for its origin in water?

Upon several occasions I have pointed out the loss of money to the United States alone by typhoid fever and similar diseases and the result is startling. Estimating upon the basis of 50,000 lives lost and 250,000 cases which recover annually from the disease, and taking the lowest legal value assessed by any State for a human life, we have the enormous sum of $278,000,000. Assuming that it is possible by proper improvement in the quality of water supply to reduce the typhoid cases and death rates by 85 per cent., then of this sum $236,300,000 might be applied annually to the payment of interest and sinking fund charges with no greater cost than we now suffer from the annual money losses by this disease. A sum which at 5 per cent. annually for interest and sinking fund charges for forty years will justify an outlay on works for water purification of $4,054,671,700.

The cities of Germany are extremely solicitous about their water supplies, and of a list of 121, but one, Rega, depends wholly, and one, Frankfort, partly upon unfiltered river water. Of a total population in these cities of 13,607,000 nearly 98 per cent. either obtain their public water supplies from unexceptional sources or rely upon slow sand filtration to properly purify such water, and it is not known that the sources of the other 2 per cent. of this large population are of questionable quality.

Filtration amoung the Germans is not limited to turbid and polluted waters like those of the Elbe and the Maas, but is applied to comparatively pure water like that of Lake Zurich and to what we would regard as very pure water, like that of the wells sunk in the sand dunes at Amsterdam and The Hague. In London from 1890-96 the death rate per 100,000 was 14.4, or less than one-sixth

of the rate which prevailed prior to 1870. The natural condition of the water from the rivers Thames and Lea may not have improved since 1870, but the management of the London filters certainly has. The city of Lawrence, Mass., is situated on the Merrimac River, nine miles below Lowell, and takes its waters from the river after it has been polluted with the Lowell sewage. Previous to the introduction of filtered water into Lawrence the typhoid fever rates were frightful, while after the filter was in operation the rates declined so much (although still high when compared with some other cities) as to lead the people to think that a miracle had been wrought. In 1890 the death rate per 100,000 was 123, in 1896 it was fifteen, a decrease of about 86 per cent.

To illustrate the extremes of good and bad water, your attention is called to the death rate of Chicago from typhoid fever for 1891, and of Munich for 1892. The death rate per 100,000 population was, Chicago, 160; Munich, 3. One of the cities which of late has suffered most severely by sewage-polluted water is Hamburg. Before filtered water was introduced there the typhoid fever death rates ranged from 23 to 34 per 100,000 population. For the year 1893, when filtration was first established, the rate fell to 18, and for the following years the rates have been 6, 9 and 6, showing a reduction of over 75 per cent. If the statement sometimes made be true, that the Germans do not as a rule drink water, how then can we explain the reduction of the typhoid rates by the substitution of good for bad water? Sometimes it is asserted that sewage-polluted water supplies can never be so well filtered as to compare in quality with water from sources of known purity. I think that facts will convince you that, from the standpoint of health, the filtered water is equal in quality to many waters supposed to be naturally pure.

It may be a mistake to assume that typhoid fever is chiefly a water-borne disease, and that the typhoid rates of any city is a correct index to the quality of the public water supply; it may be a mistake to assume that the reduced typhoid rates of London, Berlin and Hamburg are due to the filtration of the water furnished to these cities; it may be a mistake to assume that the change in the sources of water supply was the cause of the reduction of the typhoid fever rates of Munich and Vienna from among the highest to the lowest of any cities in Europe, and if so, may we not also be mistaken in assuming that knowledge is better than ignorance? That morality is better than vice? That civilization is better than barbarism?

Some people take comfort in the fact that the typhoid bacillus is not a water bacillus and cannot survive in water for an indefinite or even a great length of time. It cannot certainly exist in water for more than that period, but it is capable of doing great damage even during these brief intervals of time. We might contend that the cause of typhoid fever and other so-called water-borne diseases is not certainly known, but it would be unsafe to assume that water in some undefined manner is not concerned in spreading these diseases. The fact confronts us that—with a marked improvement in the quality of a public water supply—there is a lowering of the typhoid fever rates, and so well grounded is the belief that water is the chief agent in transmitting the organism of this and several other diseases, that most investigators have abandoned search for the cause and are directing their energies toward methods of prevention.

I have roughly described the method which nearly fifty years of use in Europe has demonstrated to be practical and always efficient. Will it require another fifty years to convince cities in this country that many of our sources of public water supply are just as much in need of artificial purification as were those of London, Berlin, Hamburg and Rotterdam, and that the results accomplished there can be accomplished here, when we seek for them in the proper manner?

NEW USE FOR OLD STOCKINGS.—The fumigation of second-hand cotton stockings is the queer duty which the Chicago health department has been recently called upon to perform. B. Shofiro, a jeweler at No. 731 West North Avenue, learning that a scarcity of cotton exists in Russia, purchased 5,000 pounds of second-hand cotton stockings, had them unraveled and the yarn baled for shipment to Russia, where the product will be used for making cotton goods. Thus he hopes to demonstrate that goods may be made and unmade in the United States and shipped halfway around the world at a profit. The Russian consul in Chicago called upon Dr. Reynolds to fumigate the bales of cotton material before shipment.

THE NON-CONTAGIOUSNESS OF YELLOW FEVER.

BROOKLYN, March 18, 1898.

To the Editor of the New York Medical Journal:

SIR—On reading Dr. Staples' article on Sydenham and Rush, in the New York Medical Journal of March 5, I wrote to him inquiring the source of his statement that "the definition of yellow fever now accepted is 'an acute, specific, infectious, contagious, paroxysmal, malignant fever.' My exception is to the word contagious. I have had a good deal of personal contact with yellow fever and the regions and particular localities where it has been always, and is still, wont to prevail, and considerable acquaintance with physicians of practical observation and experience in dealing with it; and, moreover, I have for more than fifty years given attention to publications on it during this period, while I have very carefully read the history of it in older publications. According to my observations, actual experience, reading and study, the consensus of opinion appears to me to be clearly defined, that it is believed to be personally contagious by those only who have had but litttle or no practical experience in dealing with it. Considering that your statement (New York Medical Journal) will be extensively read, it would afford me additional satisfaction in your reply to this request, if you will kindly grant it, to permit me to publish it."

His reply is as follows:

WINONA, MINN., March 8, 1898.

"DEAR DR. BELL—I am glad to have your kind note of the 5th inst., in which you noticed a point in my paper, recently published in the New York Medical Journal, relating to the matter of contagiousness of yellow fever. You object to the word contagious in the definition of yellow fever quoted by me, and ask for the source of the statement which is quoted. The definition quoted is found in Gould's "Dictionary of Medicine," page 469. The complete definition reads as follows: 'Fever, Yellow, an acute, specific, infectious, contagious, paroxysmal, malignant fever, occurring mainly in sub-tropical regions, and characterized by three stages, the febrile, the remission, and the collapse.'

"With the present understanding concerning the bacteriology of the disease, it would appear that the term 'infectious,' at least,

is applicable; and that the matter of excluding the word 'contagious' depends somewhat upon the extent to which these terms are made to be synonymous.

"I am well aware of your knowledge of the disease, which has been gained by much study and observation in different epidemics of the past, and that my information is wholly from what has appeared in the reports of others.

"If in your opinion it is worth while, it would certainly be agreeable to me for you to publish your views in reply to this item in my paper, either in the SANITARIAN or in the New York Medical Journal, as you choose. I appreciate your kind courtesy in writing to me in the matter.

"Sincerely and very truly yours,

"FRANKLIN STAPLES."

My observations and citations in this regard have been so extensively published (Transactions of the American Medical Association; Medical Society of the State of New York; American Public Health Association, the SANITARIAN, and other publications), except for the coincidence of Dr. Staples' statement with the recently published assertion of Dr. H. H. Haraldson, member of the State Board of Health of Mississippi, that extreme contagiousness of yellow fever is a distinguishing feature of yellow fever from dengue, and its close relation to the cruel and mischievous shotgun quarantines due to such erroneous statements—but for these relations I should not have raised the question.

Dr. Frederick Loeber, the physician in charge of Touro Infirmary, New Orleans, during the recent epidemic of yellow fever there, reported at the conclusion of his service in December that a hundred and five cases had been treated, of whom ten died. There were four students and fifteen nurses engaged in tending the yellow fever patients in the infirmary; that not one of the nineteen was immune, and yet that not one of them caught the disease. He says still further that of one hundred or so of other patients than yellow fever sufferers and attendants, there was not one who became infected. Dr. Loeber was asked to state (New Orleans Times-Democrat), for the benefit of the public, what disinfecting or prophylactic treatment he had subjected the non-immune students and nurses to, that they could have avoided infection. He replied that cleanliness was the sole and only specific, the necessity of which he had pressed on them. They were not allowed to

touch the clothes in which the patients had reached the infirmary; these were burned and were replaced by hospital suits. They were not allowed to leave the premises, eating, drinking, sleeping, and bathing there all the time; and this was the only regimen to which they had been subjected. So far, in fact, as the contagiousness of the disease is concerned, Dr. Loeber avers that a non-immune person might sleep in the very next cot to a yellow fever patient and be free from any danger of attack.

This experience of Dr. Loeber accords with my own on several occasions, from which the following are examples: I was for the first time brought in contact with yellow fever when I was an assistant surgeon in the navy, during the Mexican war, and at the outset, for several weeks consecutively (July-August, 1847), occupying the same room, about twenty feet square, with from four to eight patients affected with the disease, on beds so close as to be in reach of one another on either side. This was in a hospital built of unplaned pine boards on Salmadina Island, near Vera Cruz. An adjoining room communicating by an open doorway (but no door) and the only additional ward of the same hospital was occupied during the same time by from twenty to forty cases of the same disease. My health was excellent the while, as was also the health of the nurses and other attendants who had not been exposed to the infected ships whence these patients came, not one of whom contracted the disease in that hospital.

Per contra, of its infectiousness: I was transferred from the hospital to an infected ship—the steamship Mississippi. On the third day thereafter I was taken with the fever.

During the prevalence of yellow fever in Bay Ridge and in Fort Hamilton, in 1856, Dr. Joseph Bailey, U. S. Army, surgeon of the fort, contracted yellow fever and became my patient; he was extremely ill. Fearing a fatal result amid the infected surroundings, I had him transferred to the nursing care of his wife, who at the time was nursing a babe two months old, at the house of his brother, in Fourteenth street, New York. I had made Dr. Bailey's acquaintance during the Mexican War at Vera Cruz, where he escaped the disease. He thoroughly shared my convictions of its non-contagiousness and willingly acquiesced in being placed under the nursing care of his wife. I attended him in Fourteenth street until his recovery; meanwhile the move was kept secret, and his condition reported from day to day in the

Fort Hamilton bulletin. In 1862, while I had charge of the floating hospital in the lower bay of New York for the special care of yellow fever patients, among them was Lieutenant John Van Ness Philip, with black vomit. At the time he was received his case was announced in the newspapers. The next day after he was received his wife visited the health officer of the port (Dr. Gun) at Tompkinsville and implored him to allow her to visit her husband. He denied her. The circumstance was reported to me two hours afterward by the deputy health officer, Dr. Waltzer, from whom I learned also that Mrs. Philip had gone to the Mansion House, Brooklyn. The patient was in extremis, though he still retained his senses, and had asked me to send for his wife. I did so—by boat to Fort Hamilton and a quick carriage to Brooklyn. She got aboard about ten o'clock that night, in the midst of a rainstorm. Half an hour afterward she was at her husband's bedside, where, on her insistence, she remained all night, most of the time holding his hand, and twice, in advance of the nurse, held the basin to catch the ejected black vomit. She kept her post for most of the following day, when he died late in the afternoon. She accompanied me with the body to witness the burial and mark the grave. She returned with me to the hospital ship and remained as a guest for several days, until she regained composure and returned to her home.

I may here remark that this act of mine was not in contravention of the otherwise iron-clad order of the health officer. It was our understanding when I consented to take charge of the hospital ship—in the just expectation that we should have a good deal to do with yellow fever under the then existing conditions of war and commerce—that I should be left free to exercise my own judgment in that particular service. The health officer was astonished, but not offended.

The hospital was but rarely without cases of yellow fever during the summer, yet I had members of my family, including little children, to visit me several times and to stay all night, for an airing; and my eldest son was my clerk *locum tenens* for the season.

The nurses, cooks, laundry women—all were chosen with reference to their competency for the duty required of them. None of them had ever had yellow fever or ever before been brought in contact with it. Not one contracted it.

These examples are selected as ilustrative. It would be an easy matter for me to multiply them, for my personl experience in

dealing with the disease and observing its conditions extends to the Central American coast, the West Indies, and the west coast of Africa.

"Concerning the bacteriology of the disease," referred to by Dr. Staples, as any evidence of its contagiousness, it is not, I am quite sure, so regarded by Dr. Sternberg or, so far as I have been able to learn, by any bacteriologist who is also familiar with the disease by actual observation. A. N. BELL, M. D.

—From the New York Medical Journal, April 30, 1898.

P. S.—It seems hardly necessary to add to the foregoing that in all the experience referred to, as in other, scrupulous cleanliness has been a constant factor. And pertinent to it I would now, if possible, intensify attention to the qualification of the resolution adopted at the National Quarantine and Sanitary Convention in New York, in 1859 (proposed by Prof. Alex. H. Stevens):

"*Resolved,* That in the absence of any evidence establishing the conclusion that yellow fever has ever been conveyed by one person to another, it is the opinion of this Convention that the personal quarantine of cases of yellow fever may be safely abolished (as amended on motion of Dr. A. N. Bell), provided that *fomites* of every kind be rigidly restricted." This resolution was adopted by a vote of 85 to 6. Of the six who voted in the negative one only, Dr. John W. Francis, had ever had any personal experience in dealing with the disease. Of the other five but one was a physician. Among the 85 who voted in the affirmative were Drs. R. La Roche, J. P. Batchelder, G. B. Wood, W. M. Kemp, J. W. Sterling, Elisha Harris, W. C. Anderson, J. H. Griscom, Joel Foster and John Watson, who had had experience in yellow fever, and many others had attended cases of it. The same resolution was reaffirmed by the Convention the following year, in Boston, by Wilson Jewell, R. D. Arnold, W. M. Ruschenberger and other veterans.

Of *fomites,* however, my observation justifies my belief that, like those of cholera, there is no danger whatever in dealing with them while they are fresh. Black vomit, blood, intestinal discharges, urine, bedding and clothing promptly dealt with may be handled with impunity. On the contrary, *e. g.*: While I was in charge of the yellow fever hospital in the lower bay of New York,

in the summer of 1862, I was one day summoned by my colleagues (visiting physicians) of the Brooklyn Hospital to meet them in consultation on a case of fever that had been sent in. To my mind it was clearly a case of yellow fever—a woman, who died on the next day, her death being preceded by black vomit. I ascertained that she had unpacked and washed a bundle of clothing three days before she was sent to the hospital which had been sent to her from New Orleans—the effects of her husband, recently deceased. An analogous case to this was that of Surgeon Wm. Johnson, U. S. Navy, as related to me by himself: On the termination of a cruise on the West coast of Africa, where he had treated a number of cases of yellow fever on board the ship to which he was attached, he had his books packed in a barrel and so taken to his home. He so lef them remain until three months afterwards, when he proceeded to unpack them. Three days afterwards he was taken with yellow fever, of which he nearly died.

Of another kind: In Brooklyn, February, 1864, during a snow storm, I was called in consultation by the late Dr. D. C. Enos to a mariner in a sailors' boarding-house. I was greatly surprised at the case, but could not forego the significant symptoms of yellow fever. The man died about twelve hours after my first visit. He did not have black vomit. But on post-mortem examination his stomach contained it, and his liver was in the condition common to rapidly fatal cases—congested with black blood to repletion and soft. The man had arrived, just from Philadelphia, the night before I saw him. I ascertained the name of the vessel from which he came in Philadelphia, and wrote to my friend, the late Dr. R. La Roche, the authority on, and always wide-awake to, any doubtful conditions of yellow fever, asking him to assist me in tracing the case. It was quickly done. The man had arrived in Philadelphia a week before as a member of the crew of an old and exceedingly filthy West India schooner, on board of which he had been left as keeper. He occupied the forecastle, which, as Dr. La Roche wrote to me, had the appearance of never having been cleaned, and contained besides a large mass of dirty bedding and sailors' dunnage. Here, on account of the cold weather, he had set up a stove and speedily acquired the needful degree of temperature to revive the activity of the germs of the disease contained in the fomites.

A. N. B.

QUARANTINE REGULATIONS.

The Convention of the Quarantine officials in Atlanta, April 12, 1898, organized by the election of the following officers: President, H. B. Herlbeck, S. C.; Vice-Presidents, E. A. Waugh, Va., De Sausure Ford, Ga.; R. L. Harris, Fla.; Rhett Goode, Ala.; —— Murray, Miss.; J. J. Scott, La. Secretary, J. F. Weipinger, Atlanta.

The President appointed a Committee on Plans and Resolutions, as follows: Drs. Souchon, of La.; Waugh, of Va.; Alexander, of Ga.; Horsey, of Fla.; Goode, of Ala., and Haralson, of Miss.

Three sessions were held—noon, afternoon and evening, when the Convention adjourned sine die.

The principal work of the Convention was the adopting of full and competent regulations governing disinfection and detention stations and camps for the shipments of merchandise, the regulation of the disease itself, and the regulation of the railroad traffic through infected towns, as follows:

In case yellow fever should occur at any point of the Southern States, the most effective method to prevent shot-gun quarantines and their disastrous effects upon commerce is to establish disinfecting and detention stations or camps on the lines of travel by rail or boat.

It is by practical actions that the people will be reassured, and not by agreements and persuasion based on words, assurances or legislation. To show the people that all possible care is effectually taken to prevent yellow fever from reaching them is the best and only argument they should yield to.

1. Parties coming from localities infected with yellow fever should not be allowed to enter quarantine localities of the South Atlantic and Gulf States unless they have had their persons, clothing, baggage, etc., disinfected, and unless they have remained at the station ten days after such thorough disinfection, and places holding communication with infected localities may themselves be held in quarantine.

2. These stations or camps will be erected by the United States Marine Hospital Service.

3. They will be operated by the United States Marine Hospital Service.

4. The Marine Hospital Service will also be requested at an immediate date to prepare at least four disinfecting plants, including four cylinders for furnishing steam disinfection.

5. Medical inspectors from interested States and localities will be admitted to the stations to witness that the regulations are thoroughly complied with.

6. The clothes and baggage will be disinfected by moist steam under pressure.

7. Articles not amenable to this treatment will be immersed in a solution of 1 to 1,000 of bichloride of mercury for one hour; or they will be placed in the formaldehyde chamber, fed from a generator for one hour, drying them first and spreading them in the chamber.

8. All articles requiring to be subjected to moist steam shall remain in the steam chamber at a continuous temperature of from 212 to 220 degrees Fahrenheit for thirty minutes.

9. The persons will then be placed in the department of the disinfected and shall be inspected daily.

10. Upon the appearance of any tendency to yellow fever or any symptoms whatever of yellow fever, they shall at once be placed in a suitable isolated locality.

11. If they develop a case they shall be placed in the hospital of the station.

12. The persons will remain at the station ten days.

13. Persons thus detained will be given a certificate to the effect that disinfection has been practised and detention of ten days enforced, signed by the resident officer of the United States Marine Hospital Service.

14. Well authenticated immunes will not be detained, but will be disinfected.

15. Then the persons should be received everywhere and by everybody as being incapable of conveying infection.

Articles Subject to Disinfection.

16. Articles should not be shipped from dwellings, nor from places contiguous to dwellings, without being disinfected.

17. Class 1.—The following articles should be admitted without disinfection or restriction of any sort: All new and dry material, unpacked, such as lumber, machinery, new brick, new tiling,

bar and sheet iron, tin, steel, agricultural implements—no part of which is textile; iron, ties, stoves, saddlery not upholstered, wagons, new trunks, hardware without packing, lime, ice and salt in bulk, tar, turpentine, resin, stone, gravel, coal, coke, cement, grain in carloads and cooperage, oysters and fish packed in ice.

18. Fruits, sound and taken directly and in good condition from clean vessels and transferred at wharves not infected and in good sanitary condition immediately to the disinfected cars for shipment require no disinfection; freight taken directly from clean vessels, inspected and in good sanitary condition, requires no disinfection.

19. Live stock and poultry also.

20. All disinfected cars to be placarded and way bills certified to by proper sanitary officers.

21. Class 2.—The following articles will require only superficial disinfection—that is, outside of container, by formaldehyde gas fed from generator: All goods in original wooden or metal packages, not broken or packed in an infected locality. This class embraces boots and shoes in original packages, cotton, dry goods in original cases, leather goods, saddlery and saddlery hardware, drugs and chemicals in solid cases or packages, rubber and oiled clothing, sugar in boxes or barrels, rice in barrels, canned fruits, vegetables, meat and oysters, also condensed milk in solid, unbroken boxes, stone, iron or tinware, tobacco and cigars, wines and liquors, cheese in original boxes, flour, grits and meal in barrels, woodenware, butter in caddies, candles in boxes, lard, pork, bacon, oils and paints in tin cans or barrels, soap in boxes, axle grease, iron roofing, saddle-trees, raisins, matches, salted fish, potatoes, onions and apples, molasses.

22. Goods other than textile packed in textile material, not broken in infected locality and kept perfectly dry, do not require disinfection, except the container. This includes coffee, grain and spices in sacks, as also cured hams in canvas.

23. Class 3.—Articles not in the above classes, if they have been exposed to infection, will be disinfected before they are shipped; the efficiency of said disinfection shall be certified to by the proper health authorities. This refers to all merchandise not manufactured in infected locality, but kept in stock for distribution, which has not been exposed to any infection and may be safely shipped without being fumigated.

24. When it has been exposed to infection, then it should be fumigated to be made harmless.

25. When desired, all goods of this character can be made to undergo a treatment of fumigation and disinfection before being certified to by the proper health authorities.

26. Articles mentioned above that can be packed in excelsior, in perforated container, rendering the excelsior and contents capable of disinfection, will be disinfected and passed.

27. Class 4.—During the prevalence of yellow fever in any city, town or locality, no bedding nor household effects from such city, town or locality shall be received for shipment to other points.

28. All certificates and all disinfections are subject to inspection and approval by authorized agents, who may be sent by the various health authorities.

Marine Hospital Inspection.

29. Each establishment packing and repacking will employ and pay a sanitary inspector appointed by the United States Marine Hospital Service.

30. At the hour of arrival of the workmen at the establishment he will see that they are all gathered in the same place and the doors barred and remain so; also the doors of the rooms where they are at work.

31. They will disinfect the exposed parts of their bodies.

32. They will remove all of their clothing down to the skin.

33. They will don disinfected clothes, which will be clean and left by them the day before and passed through the formaldehyde chamber as above.

34. The sanitary inspector must also be disinfected in like manner as the workmen.

35. They will then only be permitted to open original packages in a previously disinfected room and distribute them and form other packages.

36. When these packages are completed and closed they will be stamped by the sanitary inspector as inspected and safe.

37. During the work the sanitary inspector will watch the work all the time.

38. After the work the workmen will remove their clothing and don their ordinary clothes, which during the working hours have been passed through the formaldehyde chamber.

39. The same regulations apply to operators in factories which intend to ship their goods to non-infected localities.

40. In addition, such goods themselves must be disinfected.

41. A general supervisor, employed by the United States Marine Hospital Service, will check the efficiency of the sanitary inspectors in stated sections or a number of establishments.

42. In case of disobedience of any of the regulations the sanitary inspector will refuse to stamp the packages.

43. In packing goods into original packages only such packing material must be used which has been disinfected within the previous twelve hours.

44. A medical or sanitary inspector from interested States or localities will always be admitted at once into the establishment to see if the regulations are carried out properly.

45. All freight in cars and the cars themselves, and all freight on or in boats and such parts of the boats themselves shall in all cases be disinfected by the United States Marine Hospital Service whenever and wherever that service may deem the same necessary.

Regulations for Yellow Fever.

1. Localities infected with yellow fever and localities contiguous thereto should be depopulated as rapidly as possible, so far as the same can be safely done. Persons from non-infected localities and who have not been exposed to infection being allowed to leave without detention, and in leaving such place shall be presented with health certificates by the legally constituted health authorities of the place. If an inspection shows that the disease be certainly confined to a few houses, and all persons who have been exposed to possible infection are known, and these houses and people be isolated under observation, the remainder of the town need not be quarantined. Should either of these conditions fail, the town shall be quarantined.

2. When practicable the patient shall be removed to hospital or other quarters little liable to infection, and so situated as to involve a minimum of danger if infected.

3. If the patient cannot be removed, all possible precautions must be taken to prevent contamination of his premises.

4. Those certainly immune to yellow fever may be given free pratique after disinfection of effects.

5. Non-immunes may be permitted to go to places incapable of infection, to remain there during the period of incubation, requiring disinfection of baggage, unless certain that it will remain in such territory.

6. Non-immunes not going to such places shall, if practicable,

be isolated under observation in non-infected quarters, so situated that if fever develops among them there shall be as little danger as possible of conveying infection, their effects being disinfected upon isolation.

7. Such persons as are isolated under observation on account of exposure to yellow fever shall be so isolated for a period of not less than ten days from the last possible time of exposure to infection. They shall be inspected—twice daily is advised.

8. Premises occupied by or having been occupied by a case sick with yellow fever shall be treated as infected and be under sanitary control, and such neighboring premises as are close enough for their inmates to receive infection from the above shall also, with their inmates, be under sanitary control.

9. These premises shall be strictly guarded, and no communication allowed with those outside except under such rules and supervision as will prevent the conveyance of the disease.

10. All possible precautions shall be taken to prevent exposure of the guards and other attendants to infection. If possible, they shall be immune. They shall be under proper supervision.

11. On the recovery, removal or death of a case of yellow fever, the premises shall be immediately disinfected, and such neighboring premises as from proximity are presumably infected are also to be disinfected.

12. Coincidentally with the foregoing measures a house to house inspection should be made of the whole community to determine whether other cases exist.

13. In the case of the death of a patient the body shall be disposed of under such sanitary precautions as will prevent the conveyance of infection.

When Quarantine is Necessary.

1. If the inspection of a town in which yellow fever exists does not show that all foci of infection, possible fomites and persons liable to develop the disease, are under observation ("in quarantine"), or if cases occur which cannot be traced to any known focus, such town shall be subject to quarantine.

2. Those who have been exposed or who come from infected localities shall be required to undergo, in the camp of probation or other designated place, a period of detention and observation of ten days from date of last exposure, before being permitted to proceed to a locality capable of being infected, their clothing and

other effects capable of conveying infection being disinfected upon entrance to place of detention. For persons known to be immune to yellow fever detention is not required, merely the disinfection of their baggage and clothing.

3. Persons who have been exposed may be permitted to proceed, under proper sanitary supervision while passing through infectible territory, without detention, to localities incapable of becoming infected, and whose authorities are willing to receive them, to remain there ten days. The baggage of such persons shall be disinfected unless it is certain they will not return into infectible territory. This exemption from disinfection shall not apply to baggage from an infected house for any point, or to baggage to points which object to receiving it undisinfected.

4. An adjacent town which is in direct communication with an infected town must be considered as being neutral territory, and, therefore, under quarantine, as shall also be such territory as from its proximity or relations to an infected town cannot be pronounced certainly clean.

Note—On account of the extreme difficulty of the health officer determining the ultimate destination of passengers bound for Atlanta, Charlotte, Nashville and similar distributing points for passengers south, the baggage of such passengers should be disinfected.

Methods of Disinfection.

The following methods of disinfection are considered efficient for yellow fever:

1. Apartments or dwellings infected with yellow fever to be disinfected by one or more of the following methods:

(a) By a thorough washing of all surfaces of apartments with an efficient germicidal solution.

(b) By sulphur dioxide for 24 hours' exposure, 4 pounds of sulphur for each 1,000 cubic feet, plus due allowance made for waste.

(c) By formaldehyde gas in not less than a 4 per cent. volume strength, and not less than 6 hours' exposure.

Note—One litre of 40 per cent. solution of formaldehyde gas will evolve about 1,425 litres (50.1 cubic feet) of gas at 20 degrees C. (68 degrees F.).

2. Grounds, outbuildings, etc., deemed to be infected, to be disinfected with a strong solution of crude carbolic acid (carbolic acid, crude, 2 parts; sulphuric acid, 1 part; water, 25 parts) or

an acid solution of bichloride of mercury (1.500); disinfection of ground preferably by fire.

3. Bedding, wearing apparel, carpets, upholstered furniture and the like to be disinfected by one or more of the following methods:

(a) By steam at a temperature of 100 to 102 degrees C.; 30 minutes' exposure.

(b) By boiling all parts of the articles to be submerged.

(c) By saturation in an efficient germicidal solution.

(d) By thoroughly wetting the surfaces of articles with a 40 per cent. aqueous solution of formaldehyde, and placing them in a closed space for not less than twelve hours.

(e) Where surface disinfection is required, formaldehyde gas of not less than a 4 per cent. volume strength and not less than 6 hours' exposure, or by sulphur dioxide for not less than 24 hours.

4. The dejecta from cases of yellow fever to be disinfected by an efficient germicidal solution.

Mails to be disinfected by one of the following methods:

(a) By formaldehyde.

(b) By sulphur dioxide.

(c) By steam.

(Newspapers must be made up in such packages as shall be penetrable to the disinfectant used.)

Miscellaneous.

Articles injured by steam, such as rubber, leather and containers, to which disinfection by steam is inapplicable, to be disinfected:

(a) By thoroughly wetting all surfaces with an efficient germicidal solution, the articles being allowed to dry.

(b) By exposure to sulphur dioxide.

(c) By exposure to formaldehyde gas.

The application of gaseous disinfection to these articles should be made in a closed space, air-tight, or as nearly so as possible.

The following are considered efficient germicidal solutions:

1. Bichloride of mercury, acid, 1-1,000.

2. Carbolic acid, pure, 5 per cent. solution.

3. Trikresol, 2 per cent. solution.

4. Solution of formaldehyde, 1-500 (which is 2 parts of a 40 per cent. solution of formaldehyde to 25 parts of water).

5. Solutions of hypochlorate of calcium (chloride of lime).

For the Railroad Traffic.

The following regulations from the committee as to the government of railroad traffic in infected towns was then adopted :

1. A passenger train to infectible localities shall not stop in an infected town, nor shall the windows or doors be allowed to be open therein; and no communication shall be allowed between the passengers or train crew and the town.

2. Freight traffic through such a town should be without stopping.

In cases where stopping in town is absolutely necessary for freight traffic, and also when the town is large and the infection general, a special crew shall take the train through the town. The relay stations where these changes are made shall be under sanitary supervision.

3. Sanitary inspectors should also be stationed in town.

Through traffic—i. e., to points incapable of receiving yellow fever infection, to be designated hereafter as "points north."

1. Freight.—Freight in sealed cars can go without hindrance through to destination.

2. Empties must not stay in an infected town or be parked in an infected locality. Flat cars must be swept clean.

Box cars made mechanically clean and dry and sent open to the relay station, where they are to be inspected for tramps. From the relay station they should be sent on under seal.

All fruit cars to be disinfected.

3. Mail.—Through mail not distributed south needs no quarantine restrictions save disinfection of bags.

Parcels except mercantile sample packages to be barred.

4. Traffic to points north can be allowed by preventing all chance of such passengers conveying infection en route, either by themselves leaving the train en route or by returning to points south or by fomites; mainly their clothing.

This traffic must be on special cars reserved for these passengers, and preferably on a special train. A sanitary inspector must accompany them through the quarantined territory, under whose absolute sanitary charge the train is.

The coaches which carry these passengers must be disinfected before they return south.

The Duties of Inspectors.

Train inspectors must be properly relayed, and those running

from the infected town should be immune. If they sleep in clean territory they must be immune.

Cars should be removed from an infected locality as soon as empty. If not, they should be disinfected where they have been. They should be sent with windows and doors open and carefully inspected at the relays for tramps.

Mail.—Letter mail needs no disinfection; newspapers must be disinfected; parcel mail is prohibited altogether.

All train crews from an infected town must be changed and not be allowed to have direct communication with certainly clean territory. This should be done at a non-infected place as isolated as possible, a siding rather than a station, and certainly not in a town.

Every man, mail agent, expressman and train butcher, must make this relay, unless we know that he is going north not to return to points south, in which case he is like a through passenger. Pullman crew to be relayed.

None of the merchandise of the train butcher, unless disinfected newspapers be excepted, must pass the relay. No possible fomites must pass the relay to the crew bound north, and as little communication as possible—none save such as is necessary for the run of the train—is allowed. The relay must be under the supervision of a sanitary officer or officers (two are generally required), whose position is one of great responsibility. At these stations a very careful search for tramps must be instituted.

The camps for the north and south crews should be at a considerable distance from each other, and the run of trains should be arranged so as to have the crews in camp as little as possible. For passenger trains there need be no delay; for freight trains generally there must be, and their crews go in camp.

Occasions may arise when it is necessary to guard the southern relay camp by a number of guards, as if it were a camp of detention. It must never be allowed to become infected; if it does the camp must be moved.

Laundry for Pullman cars not to be done in infected places.

Steamboat communication can be carried on—

First—By relays like railroad trains.

Second—By supervision of the landings of freight and loading of same, so as to prevent communication between the people ashore and the boat.

It is confessedly difficult, but possible.

Health Certificate in Time of Epidemics.

The Convention then adopted the following form of health certificate to be used in the Southern States during yellow fever epidemics:

Office of Board of Health of———.
Health Officer———

To Whom It May Concern:

This is to certify that Mr. ——— has given satisfactory evidence to me that he has been in ——— not less than ten days, and, to the best of my knowledge and belief, he has not been exposed to the infection of yellow fever and has not been in any infected or suspected locality for ten days.

Description: Age, — years. Weight, — pounds. Height, —. Complexion, —. Hair, —. Eyes, —.

———————,
Health Officer.

Signature:
———————

When deemed necessary affidavit shall be required by the health officer.

The certificate will be issued without fee.

States Governed by Regulations.

A resolution was adopted instructing the secretary to send copies of the Convention proceedings to the Governors of North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Texas, Tennessee and Arkansas, with instructions that they communicate the same to their respective health officers.

As a result of the deliberations of the body, the following resolutions, recommended by the Resolution Committee, were adopted:

"Resolved, That this Convention approves the plan of having medical inspectors attached to those consulates where yellow fever and cholera are epidemic, with a view of securing for our protection definite information as to the exact sanitary condition and the presence or absence of contagious diseases in such consular district; and that Congress be urged to make the necessary appropriations to carry the plan into effect."

The following resolution from the same source was also adopted:

"Resolved, That this Convention is of the opinion that it is a duty devolving on all nations to take measures to eradicate any plague centres from their territory, and that the existence of such plague centres is a menace to all other nations, and that our State Department be requested to take measures through proper diplomatic channels for the conveyance of this opinion to the Governments deemed obnoxious to the opinion as herein expressed."

EXPERIMENTS WITH FORMALDEHYDE GAS AS A DISINFECTANT.

By E. M. PARKS, M. D.,

Bacteriologist of the New York Board of Health.

At the suggestion of Dr. H. M. Biggs, I undertook, in March, 1897, a series of experiments for the purpose of testing the value of formaldehyde gas as a disinfectant for health department purposes. Later Dr. Arthur R. Guerard, assistant bacteriologist to the department, joined me in carrying on the work. The investigations were made in the health department laboratories of the city of New York, and the most important conclusions reached may be summarized as follows:—

1. *Disinfection of infected dwellings.*

The interior of dwellings may be superficially disinfected by means of formaldehyde gas, all apertures being tightly closed, when employed in the proportion of not less than 1 per cent. by volume strength (that is, by the evaporation, in a suitable apparatus, of six ounces of the 40 per cent. solution of formaldehyde per 1,000 cubic feet of air-space), the time of exposure to be not less than two hours.

Under these conditions the common, non-spore-bearing pathogenic bacteria are surely and rapidly destroyed, when freely exposed to the action of the gas. Spore-bearing bacteria are not thus, as a rule, destroyed; but, as there is no need to use a disin-

fectant which will destroy spores, except in rare cases, such as anthrax, and as in these special methods can be carried out, this is of little practical significance in house disinfection.

The penetrative power of formaldehyde gas, under the conditions ordinarily existing in house disinfection, is extremely limited, even when used in double the strength above mentioned, and with a very much longer exposure. Articles, therefore, such as bedding, carpets, upholstery, etc., should be removed to a disinfecting station for disinfection by steam, hot air, or formaldehyde gas, in chambers specially constructed for the purpose. If this is impossible, the materials to be disinfected should be as thoroughly exposed as possible, and for at least six hours, to the gas.

2. *Disinfection of bedding, carpets, upholstery, clothing, articles of leather, books, etc.*

These may be disinfected by formaldehyde gas in the ordinary steam-disinfecting chamber, the latter to be provided with heating and vacuum apparatus and special apparatus for generating and applying the gas, which should be used in the proportion of not less than 10 per cent. by volume strength, the time of exposure to be not less than eight hours. In order to insure complete penetration of the articles to be disinfected, they should be so placed as to allow a free circulation of the gas around them; that is, in the case of bedding, clothing, etc., they should either be spread out on perforated shelves or loosely hung up. The addition of moderate heat (110 to 130 degrees Fahrenheit), with or without the aid of a partial vacuum, greatly facilitates the operation, the presence of a vacuum not being so important, apparently, as that of heat.

For the disinfection of upholstered furniture and other articles requiring much space, a very large chamber, or, better, a room which can be tightly closed and heated up to at least 100 degrees Fahrenheit, is to be recommended in place of the ordinary chamber.

In the disinfection of books it would be necessary to have the leaves kept open, so that the gas could pass through them, for which purpose a special apparatus might be devised. Shelves do very well, with books lying separate and on end.

Articles of clothing, etc., may also be disinfected on a small scale by spraying them with a solution of formaldehyde (40 per cent.), and then hanging them in an air-tight chamber for twelve hours.

3. *Disinfection of ambulances and other conveyances.*

Ambulances and other conveyances which can be *tightly* closed may be disinfected by means of formaldehyde gas, when used in the proportion of 10 per cent. by volume, the time of exposure to be not less than one hour. No gaseous disinfectant, however, is applicable to the disinfection of conveyances *which cannot be tightly closed.*

4. *Comparative merits of the various methods tested of generating formaldehyde gas.*

(a) The generation of formaldehyde gas by means of lamps, directly by the oxidation of wood alcohol, though simple in its application, is not to be recommended for disinfection, so far as our experience teaches, in such work as is carried on by health departments, for the following reasons: the yield of formaldehyde gas is uncertain; it is not devoid of danger from fire; it is rather expensive.

(b) The method of generating the gas from solid formaldehyde (trioxymethylene pastils), as proposed by Schering, is simple, convenient, efficacious in small rooms, and comparatively inexpensive. The multiplication of lamps, however, which would be necessary for use on a large scale, renders it impractical. Moreover, it has the objection of all lamps which are left burning unattended in a room—the possible danger of fire. The simplicity and convenience of this method, nevertheless, commend it particularly for use on a small scale, either for deodorizing or disinfecting purposes.

(c) The Trillat system of disinfection is excellent in many respects. It is efficacious and reliable. The chief practical objections to its use are that the apparatus, being constructed to withstand a high pressure, is heavy and cumbersome, and not without danger, that it is complicated and requires constant care and attention, and that it is quite expensive.

(d) Lastly, the method, as *now* employed by the Sanitary Construction Company, of passing through a heated copper tube the formalin solution, is simple, easily managed by any one, devoid of danger, and convenient for transportation. It is still, however, more or less liable to get out of order and require repairs. We have lately found that the tube for the passage of the gas from the hot copper coil should be wide throughout, and should be a poor conductor of heat. This allows of increased production of gas, and lessens its deterioration in the tube. It is efficacious,

and is the least expensive when the apparatus is to be frequently used. The apparatus, however, should be carefully constructed, and the operation properly attended, in order to obtain constant results.

5. *Comparative cost of apparatus and of production of formaldehyde and sulphur-dioxide gas per 1,000 cubic feet of space, to be superficially disinfected as in dwellings. As used by us, it was as follows:—*

(1) *Lilly Lamp* (large size):	
Cost of apparatus	$60.00
Cost of disinfection per 1,000 cubic feet	.25
(2) *Schering's Disinfector:*	
Cost of apparatus	3.00
Cost of disinfection per 1,000 cubic feet	.21
(3) *Trillat Autoclave:*	
Cost of apparatus (now reduced to about $60)	100.00
Cost of disinfection per 1,000 cubic feet	.11½
(4) *Sanitary Construction Company's Apparatus:*	
Cost of apparatus	25.00
Cost of disinfection per 1,000 cubic feet	.07½
(5) *Sulphur Fumigation:*	
Cost of apparatus	.03
Cost of disinfection per 1,000 cubic feet, by burning sulphur, 3 lbs. to 1,000 cubic feet	.08

Our trials have been made at temperatures between 50 and 110 Fahrenheit, in hospital wards (30,000 cubic feet), in dwellings, and in tight chambers. Typhoid, diphtheria, and staphylococcus cultures were employed. Thick and thin threads were used. The thin threads were always sterile after disinfection, except on windowsills and just in front of doors. The thick cords were frequently not sterilized completely by the methods of room disinfection above described.

In a word, we have found formaldehyde much better and less destructive than sulphur, though subject to some of its limitations, especially in the slowness of its penetration.—Journal of the Massachusetts Association of Boards of Health for March.

THE USE OF FORMALDEHYDE IN HOUSE DISINFECTION.

By DAVID D. BROUGH, M. D.

These series of experiments with formaldehyde gas were undertaken at the request of the Board of Health of the city of Boston. The objects of the investigation were to find, if possible, the value of formaldehyde as a germicide for surface disinfection, its powers of penetration, and what reliance could be placed on its general application as a practical disinfectant in house disinfection such as occurs in the routine of health work. The first experiments were undertaken during the summer months, with especial reference to its germicidal qualities; and the second series in the fall had especial reference to the amount of gas that it was necessary to generate to accomplish satisfactory results.

The experiments were all made in various houses of the city that required disinfection on account of their having contained cases of contagious disease. The diseases for which disinfection was performed were scarlet fever and diphtheria. No selection was made in the rooms. They were taken as they came, from day to day, and were scattered over various portions of the city. Most of the rooms were in the poorer class of tenements in the central and densely populated areas of the city. Most of the tests were made in single or double rooms. A few occupied the whole suite.

The apartments were prepared for disinfection in the following way. Closet and wardrobe doors left open, drawers of bureaus and chests partly opened. The bedding, bedclothes and wearing apparel loosely spread out or hung up to present as much surface as possible for the action of the gas. The crevices of the windows, cracks of doors, fissures about walls and flues, were closed by covering them with strips of gummed paper. This paper comes in rolls, is about two inches wide, and is very convenient and easy to handle. It closes the crevices very effectually, and prevents the escape of a large amount of gas that would otherwise occur.

The gas was generated from the ordinary 40 per cent. aqueous solution of formaldehyde. The apparatus used for generating the gas was the autoclave, manufactured by the Sanitary Con-

struction Company. In the first series of experiments the autoclave was left in the room and the room sealed, as the gas had commenced to be discharged and it was seen that the apparatus was working properly. The amount of gas to be generated was known by the amount of alcohol in the lamp beneath the autoclave, which was used for heating the solution. In two of the first series the gas was passed into the room by means of a rubber tube and brass pipe inserted into the keyhole. The amount of solution in the cylinder at the commencement and at the end of the experiment was carefully measured.

At first, a small amount of calcium chloride was mixed with the solution of formaldehyde; but later the aqueous solution of formaldehyde alone was used.

The materials used in making the tests were silk threads and squares or strips of gauze, which had first been carefully sterilized by heat. They were then allowed to soak in freshly prepared twenty-four hours pure bouillon cultures of the organisms to be tested. After the threads and squares of gauze had been thoroughly saturated with the organisms, they were allowed to dry in the incubator at a temperature that would remove the moisture, but not interfere with the vitality of the organisms. The tests were all made with dried cultures, as this is the condition in which we would ordinarily meet them in the rooms requiring disinfection. In the dried condition the organisms are supposed to be more resistant to the action of germicides.

The bacterium regularly used was the bacillus of diphtheria. Other organisms, the staphylococcus aureus, typhoid, and anthrax, were occasionally used; but the diphtheria was used alone in the larger majority of cases. It was chosen because it is the most frequent known bacterium for which disinfection is required and the pathogenic organism most commonly met with. It represents a type of pathogenic organisms that have a fairly good resisting power to the action of germicides, and stands for a fair average of the non-spore-bearing pathogenic bacteria.

These threads and squares of gauze were taken to the apartments to be disinfected and distributed in various parts of the room just before the gas was allowed to escape. The outside door was sealed with paper strips, and allowed to remain closed for the usual period of from five to six hours.

Control cultures to prove the presence of the bacillus were made in every case. This was done by selecting one of the test threads

or squares of gauze from among those to be used before the others were placed in the room. The bouillon was always carefully sterilized and tested before being used. The controls generally gave an abundant growth in from 12 to 24 hours.

At the end of the allotted time the room was opened. The gas was usually present in such an amount that it was impossible to enter at once. After a few minutes' airing it was possible to enter and get the threads, this gas causing only a temporary smarting of the eyes and irritation of the nose and throat. The threads were then picked up with sterilized forceps and placed in bouillon, which was brought to the room, or then placed in sterilized test-tubes and placed in bouillon in the laboratory. Possibly, placing them direct into the nutrient bouillon removes any slight degree of contamination from transfer.

The culture tubes were placed in the incubator at 37 degrees Centigrade, and allowed to remain for 72 hours or more. They were examined every day, but the results were only drawn from presence or absence of growth at the end of 72 hours. It frequently happened that no growth would appear at the end of 24 or 48 hours, while at the end of 72 hours there would be a very abundant growth of the organism. This would show that the organisms on the surface had been killed, but that those that were more deeply imbedded in the thread had not been destroyed, and regained their vitality as they were gradually soaked out under the influence of the bouillon. Whenever a growth appeared in the bouillon either in 24, 48, or 72 hours, a secondary culture was made on blood serum, and the preparation examined microscopically to prove conclusively the nature of the growth.

The materials and media for making the tests were kindly furnished at the bacteriological laboratory of the Harvard Medical School by Dr. Ernst; and to him and his assistant, Dr. J. W. Cooledge, I am deeply indebted.

The first series of experiments were made during the months of June, July, and August, 1897.

EXPERIMENT I. Room, 1,136 cubic feet, 32 ounces used. Exposure was for 5 hours. 24 serum tubes were freshly inoculated with pure cultures of staphylococcus aureus, diphtheria, anthrax, and typhoid. At the end of 72 hours there was growth present at the bottom of all the tubes, while there was none at the top.

II. Room, 1,204 cubic feet, 2 windows, 1 door. Dried cultures on silk threads of anthrax, aureus, diphtheria, and typhoid. These threads were placed in the bottom of sterilized test-tubes, and distributed in various positions of the room. The tubes were all placed upright. Exposure was for 5 hours, and 32 ounces of the gas were used. At end of 72 hours all the organisms gave abundant growth except the typhoid. This apparently poor result is to be explained from the fact that the formaldehyde and air being of about the same specific gravity, a cushion of air formed at the bottom of the tubes and prevented the gas from gaining access to the threads.

III. Room, 1,144 cubic feet, 32 ounces used. Aureus, anthrax, typhoid, and diphtheria on 8 dried threads used. These tubes were placed in the horizontal position, and the threads placed near the outer end. No growth in any except the anthrax.

IV. In this and subsequent experiments the bacillus of diphtheria alone was used. 20 dry threads of diphtheria. Room, 1,352 cubic feet, 3 doors, and 2 windows; generator placed in centre of the room; room closed for 5 hours; amount, 32 ounces. Threads placed as follows: 5 on various parts of the floors; 2 on chairs; 1 thread, 15 feet long, from ceiling to floor; 4 in one layer sheet; 2 in pockets of clothes; 3 between mattresses; 3 between pillows. Result, 72 hours: 4 on floor, sterile; 1 on floor, growth of non-pathogenic organism; 1 on chair, sterile; 1 on chair, growth of non-pathogenic organism; 2 in sheets, sterile; 2 in sheets, growth of diphtheria bacillus; 1 long thread from ceiling to floor, sterile; 2 in pockets, sterile; 3 between mattresses, growth diphtheria bacillus; 3 between pillows, growth diphtheria bacillus.

V. Room, 900 cubic feet; 8 diphtheria threads; exposure 5 hours; amount, 32 ounces. Result: 2 on floor, sterile; 1 on chair, sterile; 1 loosely wrapped in blanket, sterile; 1 in trousers' pockets, sterile; 1 between pillows, growth diphtheria bacillus; 1 between 2 mattresses, growth diphtheria bacillus; 1 in centre feather pillow, growth diphtheria bacillus.

VI. 5 dried squares of gauze, with diphtheria bacillus. Room, 594 cubic feet, 2 doors, 1 loose flue; room closed for six

hours; amount, 28 ounces. Pieces of gauze placed in various portions on the surface. Result: 3, sterile; 2, growth of non-pathogenic organism, a spore-bearing bacillus.

VII. 6 dried squares of gauze with diphtheria. Room, 2,002 cubic feet, 2 doors, 2 windows; amount, 48 ounces; room closed 6 hours. Result: 1 placed in wardrobe, sterile; 1 placed on floor, sterile; 1 placed on top of bedstead, sterile; 1 placed in fold of sofa, growth of diphtheria bacillus; 1 placed between 2 mattresses, growth of diphtheria bacillus; 1 placed in 4 folds of quilt, growth not pathogenic.

VIII. 7 squares of linen cloth, with diphtheria bacillus. 2 rooms adjoining, with a capacity of 2,079 cubic feet, 2 windows, 1 door; rooms closed for 6 hours. Result: 1 placed in bureau drawer, sterile; 1 placed on floor, sterile; 1 placed on mantel, sterile; 1 placed on table, sterile; 1 placed in dressing-gown pocket, sterile; 2 placed between mattresses and pillows, growth of diphtheria bacillus.

IX. 9 threads and squares of cloth. Room and closet, 1,494 cubic feet; room closed for six hours; amount used, 32 ounces. Result: 3 placed on top of mattress, sterile; 1 placed on top of bedstead, sterile; 1 placed on top of pillow, sterile; 1 placed on floor, sterile; 1 placed on floor, growth slight of diphtheria bacillus; 1 placed on top mattress, growth not pathogenic.

X. 11 dried diphtheria threads. Room, 700 cubic feet, 1 door, 1 window; room closed six hours; amount used, 25 ounces. 3 placed on floor, sterile; 3 placed on top pillow, sterile; 3 placed in centre pillow, growth; 2 placed between mattresses, growth.

In this first series of experiments the results were practically harmonious in every case. Out of the 45 threads and squares of gauze used in testing the disinfection of surface in the right rooms, 39 were absolutely sterile, 5 gave growth of non-pathogenic organisms, 1 gave growth of diphtheria bacillus, showing that in more than 97 per cent. the diphtheria bacillus was killed when exposed to the action of the gas; and the result was the same whether the exposure was 5, 6 or 7 hours.

Of 9 threads placed almost superficial, such as wrapped loosely in sheets or placed in pack, 6 were sterile and 3 gave growth.

Of the 17 threads used in testing deep penetration, such as placing between mattresses or pillows or in the centre of feather pillows, there was a growth in every case.

The average temperature of the days of the tests were 72 degrees Fahrenheit.

The amount of solution used was 27 ounces to the 1,000 cubic feet. There was in several of the experiments some calcium chloride used; but this amount was not measured, and the average amount of the pure solution would be somewhat less.

The conclusions that can be drawn from these experiments are:

(1) That formaldehyde gas is a practically complete surface germicide.

(2) That it has very little or no penetrating power.

The next series of experiments was undertaken during the months of October, November, and December. These tests were carried on under practically the same conditions as those done during the summer. Rooms were of the same general class of tenements. The Sanitary Construction Company regenerator in the first form, and also in a new form, was used, with a coil of pipe under the cylinder, through which the solution of formaldehyde passed and became vaporized. The gas was introduced by the brass pipe passed through the keyhole. The exposure in all except one case was for five hours from the time the gas commenced to be discharged. The tests were silk threads on which diphtheria bacilli had been dried. Conditions were the same as in the previous series of experiments. The second series of experiments was undertaken with a view of finding out the relation between the amount of gas generated and the amount of sterilization accomplished. It was claimed that small amounts of the material would accomplish the same results as larger amounts, and some tests were made with this in view. Some twenty-one rooms were used. The tests were entirely for superficial disinfection, and the test threads were placed in various portions of the room, on the floor, mantels, etc.

The following is a summary of the results in some of the experiments made during October, November, and December. The results are simply an average of the amount of the gas that was used in the various rooms.

I. 5 ounces to 1,000 cubic feet; 12 diphtheria threads. Result: growth in every case.

II. 6 ounces to 1,000 cubic feet; 12 diphtheria threads. Result: growth in every case.

III. 9 ounces to 1,000 cubic feet; 9 gauze strips. Sterile, 1; growth, 8 to 6 were of non-pathogenic organisms.

IV. 10 ounces to 1,000 cubic feet; 5 diphtheria threads. Sterile, 1; growth, 4.

V. 11 ounces to 1,000 cubic feet; 7 diphtheria threads. Growth in every case.

VI. 11¼ ounces to 1,000 cubic feet; 5 diphtheria threads. Growth in every case.

VII. 11½ ounces to 1,000 cubic feet; 10 diphtheria threads. Sterile, 9; growth, 1.

VIII. 12 ounces to 1,000 cubic feet; 8 diphtheria threads. Sterile, 2; growth, 6.

IX. 14 ounces to 1,000 cubic feet; 8 diphtheria threads. Sterile, 7; growth, 1.

X. 13 ounces to 1,000 cubic feet; 8 diphtheria threads. Sterile, 2; growth, 6.

XI. 18 ounces to 1,000 cubic feet; 5 diphtheria threads. Sterile, 4; growth, 1.

XII. 19 ounces to 1,000 cubic feet; 6 diphtheria threads. Growth in every case.

Several tests were then made by increasing the amount to about 30 ounces to 1,000 cubic feet, with the result that sterilization was accomplished in practically every instance. The only exceptions were in two instances, where, with an average of 30 ounces to the 1,000 cubic feet, the results failed to be satisfactory. As these two cases were performed on very cold days, when the temperature was below 35 degrees Fahrenheit, the only inference that could be drawn was that the temperature had considerable action on the gas, as the other conditions were the same. The influence of the temperature appears to me to have considerable influence on the action of the gas. During the summer there was a good result, with larger amount in every case in rooms of the same character as in the fall. The only conclusion that can be drawn from these experiments is that under 11 ounces to the 1,000 cubic feet the action of the gas is very inefficient. From 11 to 20 ounces to the 1,000 cubic feet the results are very unstable, sometimes satisfactory and sometimes the reverse. With larger amounts the results are far more constant. The fact that the results with the same amounts with different observers differ so much may depend on three factors: (1) the amount of leakage; (2) the influence of temperature; (3) the relative amount of humidity or moisture.

The settlement of these three questions will very much increase our knowledge on the properties of formaldehyde. So far as our

experience goes, we would draw the following general conclusions from our experience with formaldehyde:

(1) That formaldehyde gas is a very efficient and practical germicide for superficial disinfection.

(2) That its penetrating power under ordinary conditions is very slight. For deep penetration it has practically no value.

(3) That larger amounts give much more constant and satisfactory results than small amounts.

(4) That, other things being equal, the gas acts better at fairly high temperatures than at low. It also apparently gives better results in warm, dry rooms than in those that are cold and damp.

(5) That its action does not seem to depend on the length of exposure. In five hours' exposure the results were the same as for a longer period.

It may be here noticed, in conclusion, that the gas is not so innocuous to animal life as some writers have stated. While no experiments were made with this in view, it was observed that all the flies were invariably killed, and generally the bed-bugs. One dog and two cats, which were accidentally left in the rooms of different houses, and exposed to the action of the gas, were found dead when the rooms were opened.—Journal of the Massachusetts Association of Boards of Health for March.

La Maladie du Sommeil.—While the bubonic plague seems to be spreading in India, and threatens almost to equal in fatality the epidemic of a year ago, the French physicians in Algeria have discovered a disease in Africa which, if the meagre reports which have been received prove true, is none the less fatal. It is a mysterious disease, and no satisfactory diagnosis has yet been made of it. It first shows itself by the patient having an inordinate desire to sleep. Its symptoms resemble those manifested in laudanum poisoning. If the patient be not at once aroused, he soon falls into a stupor, which is succeeded by death. From its symptoms it has been called by the correspondents of French medical journals in Algeria "La Maladie du Sommeil" (the disease of sleep). Europeans are not susceptible to it, Arabs only slightly, but the negro falls a ready victim. Two doctors of the University of Coimbe have a theory that the disease is microbic. With some bacilli in serum obtained from the blood of a young negro who had died from the disease they inoculated half a dozen rabbits. The little animals became drowsy and soon died, betraying all the symptoms of the disease.

THE NATIONAL HEALTH SERVICE—ITS PRESENT STATUS IN CONGRESS.

The outcome of the hearing before the Committee on Interstate and Foreign Commerce, referred to in our May number, was two reports, majority and minority; but both ignored the Wingate (Spooner) bill, and recommended the Marine Hospital Service under its present auspices, with amendment of the law by which it is governed. April 30, 1898, the committee reported as follows:

Reported with amendments, committed to the Committee of the Whole House on the state of the Union, and ordered to be printed.
(Insert the part printed in italics.)

A BILL

amending "An Act granting additional quarantine powers and imposing additional duties upon the Marine Hospital Service," approved February fifteenth, eighten hundred and ninety-three.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That "An Act granting additional quarantine powers and imposing additional duties upon the Marine Hospital Service," approved February fifteenth, eighteen hundred and ninety-three, be amended by striking out the following words in section one: "And with such rules and regulations of State and municipal health authorities as may be made in pursuance of or consistent with this Act," and striking out section three and inserting the following in place of said section:

"SEC. 3. That immediately after the passage of this Act the Secretary of the Treasury shall make such rules and regulations as are necessary to prevent the introduction into the United States of any infectious or contagious disease from any foreign port or place, or the spread of such diseases from one domestic port to another, and such necessary rules and regulations as shall be observed by vessels or vehicles departing from foreign ports or places for ports or places in the United States to secure the best sanitary condition of such vessels or vehicles, their cargoes, pas-

sengers, and crews, which rules and regulations shall be published and communicated to and enforced by consular, quarantine, and customs officers of the United States and the State and local quarantine officers of the United States. All rules and regulations made by the Secretary of the Treasury shall operate uniformly, so far as climatic conditions will justify, in the interest of security against the introduction or spread of said infectious and contagious diseases, and shall not discriminate against any port or place. None of the penalties herein imposed shall attach to any vessel from a foreign port, or owner or officer thereof, until a copy of this Act, with the rules and regulations made in pursuance thereof, has been posted up in the office of the consul or other consular officer of the United States for ten days in the port from which said vessel sailed, and the certificate of such consul or consular officer, over his official signature, shall be competent evidence of such posting in any court of the United States.

"At any port or place in the United States where the Secretary of the Treasury shall deem it necessary for the prevention of the introduction of contagious or infectious disease from a foreign port or place that incoming vessels, vehicles, or persons shall be inspected by a national quarantine officer, such officer shall be designated or appointed by the Secretary of the Treasury, on recommendation of the Surgeon-General of the Marine Hospital Service, and at any such port or place no vessel, vehicle, or person from a foreign port or place shall be admitted to entry or enter without the certificate of said officer that the United States quarantine regulations have been complied with.

"Any vessel sailing from any foreign port without a United States consular bill of health, and arriving within the limits of any collection district of the United States, and not entering or attempting to enter any port of the United States, shall be subject to such quarantine measures as shall be prescribed by regulations of the Secretary of the Treasury, and the cost of such measures shall be a lien on said vessel, to be recovered by proceedings in the proper district court of the United States and in the manner set forth above as regards vessels from foreign ports without bills of health and entering any port of the United States.

"National quarantine stations now in operation shall be conducted in accordance with the provisions of this Act, and the Supervising Surgeon-General, with the approval of the Secretary of the Treasury, is authorized to designate and mark the boun-

daries of the quarantine grounds and quarantine anchorages for vessels, which are reserved for use at each United States quarantine station; and any vessel, or officer of any vessel, or other person, trespassing upon such grounds or anchorages, in disregard of the quarantine rules and regulations, shall be deemed guilty of a misdemeanor and subject to arrest, and, upon conviction thereof, be punished by a fine of not more than three hundred dollars, or imprisonment for not more than one year, or both, in the discretion of the court.

"And any master or owner of any vessel, or any person violating any provision of this Act or any rule or regulation made in accordance with this Act, relating to inspection of vessels, or relating to the prevention of the introduction of contagious or infectious disease, and any master, owner, or agent of any vessel making a false statement relative to the sanitary condition of said vessel or its contents, or as to the health of any passenger or person thereon, shall be deemed guilty of a misdemeanor and subject to arrest, and, upon conviction thereof, be punished by a fine of not more than five hundred dollars, or imprisonment for not more than one year, or both, in the discretion of the court.

"Medical officers of the United States, duly clothed with authority to act as quarantine officers at any port or place within the United States, and when performing such duties, are hereby authorized to take declarations and administer oaths in matters pertaining to the administration of the quarantine laws and regulations of the United States.

"The Secretary of the Treasury shall, whenever in his judgment it is necessary, make rules and regulations to prevent the introduction of infectious or contagious diseases into one State or Territory, or the District of Columbia, from another State, Territory, or the District of Columbia, and when such rules and regulations have been made they shall be promulgated by the Secretary of the Treasury and enforced by the sanitary authorities of the States and municipalities when the State or municipal authorities will undertake to execute or enforce them; but if the State or municipal authorities shall fail or refuse to enforce said rules and regulations, or other rules or regulations made under the provisions of this Act, the President shall execute and enforce the same, and adopt such measures as in his judgment shall be necessary to prevent the introduction or spread of such diseases, and may detail or appoint officers for that purpose: *Provided, how-*

ever, That nothing in this Act contained shall be so construed as to authorize the Secretary of the Treasury to interfere with the State or municipal authorities in the regulation of local affairs so long as the introduction and spread of diseases are properly controlled and treated: Provided further, That there shall be no interference with authorized medical officers charged with the duty of carrying out the authorized regulations, who shall be permitted to freely pass with such property and appliances as may be designated in such regulations, from State to State and from point to point in a State, and remain at such points as long as may be deemed necessary to properly control all infected places and treat such infection and prevent the spread of the same.

"Whenever yellow fever, cholera, plague, or typhus fever has passed the quarantines of the United States, or in any manner any one of these diseases has gained entrance or has appeared within the limits of any State, Territory, or the District of Columbia, the quarantine regulations of the United States, prepared under the direction of the Secretary of the Treasury, shall be supreme and have precedence of State or municipal quarantine laws, rules, or regulations, and the President is authorized to enforce the same within the limits of any State, Territory, or the District of Columbia, and to control the movement of vessels, railway trains, vehicles, or persons within any State, Territory, or the District of Columbia, to prevent these diseases from spreading from one State, Territory, or the District of Columbia, to another State, Territory, or the District of Columbia, and to prevent unnecessary restrictions upon interstate commerce; and whenever, in accordance with the rules and regulations made as herein authorized to prohibit or permit the movement of vessels, railway trains, and vehicles, or transportation of persons, prohibitions or permits have been made or granted, any persons violating said prohibition or permit shall be deemed guilty of a misdemeanor, and shall be subject to a fine of not more than five hundred dollars, or imprisonment for not more than twelve months, or both, at the discretion of the court; and any violation of said prohibition or permit shall be reported to the United States district attorney for the district in which the offence has been committed, who shall thereupon institute necessary proceedings for the recovery of the penalty herein imposed."

That section six of said Act shall be amended to read as follows:

"That on the arrival of an infected vessel at any port not pro-

vided with proper facilities for treatment of the same, the Secretary of the Treasury may remand said vessel, at its own expense, to the nearest national or other quarantine station, where accommodations and appliances are provided for the necessary disinfection and treatment of the vessel, passengers, and cargo; and after treatment of any infected vessel, or inspection of any vessel not infected at a national quarantine station, and after certificate shall have been given by the United States quarantine officer at said station that the vessel, cargo, and passengers are each and all free from infectious disease, or danger of conveying the same, said vessel shall be permitted to enter and admitted to entry at any port of the United States named within the certificate. But at any ports where sufficient quarantine provision has been made by State or local authorities, the Secretary of the Treasury may direct vessels bound for said ports to undergo quarantine at said State or local station."

That section eight of said Act shall be amended to read as follows:

"That whenever the proper authorities of a State shall surrender to the United States the use of the buildings, grounds, and disinfecting apparatus at a State or municipal quarantine station, the Secretary of the Treasury shall be authorized to purchase them at a reasonable compensation, or pay a reasonable rental for their use, if in his opinion they are necessary to the United States; and the expense of said purchase or rental is made payable from the epidemic fund.

"That the Surgeon-General of the Marine Hospital Service shall, whenever he may deem it necessary, appoint in each port exposed to yellow fever, or where such disease has ever been introduced, a port sanitary inspector, who shall have been a practising physician for at least five years before his appointment at said port, and who shall be familiar with the symptoms of the disease hereinbefore mentioned, and skilled in its prevention and treatment.

"It shall be the duty of the port sanitary inspectors or quarantine physicians so appointed to make careful examination of the sanitary condition and surroundings of the ports where they reside and for which they are appointed, and to report each month, or oftener, if required so to do, the facts as to the sanitary condition of such ports to the Surgeon-General of the Marine Hospital Service, with such suggestions and recommendations as they

may think necessary and proper. The said port sanitary inspectors shall perform such other duties in treating yellow fever or other infectious diseases as the Surgeon-General of the Marine Hospital Service shall direct; and they shall each be paid from the Treasury, upon vouchers signed by the Surgeon-General of the Marine Hospital Service, the sum of fifteen hundred dollars annually, payable, in equal quarterly installments, on the first days of January, April, July, and November."

H. R. 4363. Introduced by Mr. Hepburn.

MEDICAL EXCERPT.

By T. P. CORBALLY, A. M., M. D.

IODIDE OF ARSENIC IN SCROFULOUS CHILDREN.—Dr. Rousseau Saint-Philippe has presented to the Académie de Médecine an interesting communication on the effect of iodide of arsenic in lymphatic and strumous children.—Gazette Hebdomadaire, 24th April, 1898.

Such children are not to be considered as affected with tuberculosis, disease of the bones nor of the ganglions; but simply as children having a strumous condition, with a tendency to develop such affections as recurrent impetigo, chronic eczema, stomatitis, opthalmia, chronic bronchitis with bronchorrhea, chronic enteritis with large abdomen, oxyuria, etc. These children may perhaps be considered as subjects for the development of tuberculosis, but it would be difficult to prove that they are really consumptive. However, the resistance of the lesions to local treatment by means of external applications shows plainly that it is the constitutional conditions that must be treated. If the local affections are treated by means of external applications they relapse with obstinate persistency at the same place, or at some parts more or less remote.

For a long time the iodides have been employed in these cases to relieve the general condition, but the metallic iodides and the iodide of potassium are not well borne by children. The iodide of iron does not contain sufficient iodine to meet the cases, and I determined to try the iodide of arsenic. The results have been most satisfactory. In order to accurately test their value I have discontinued, in the children treated, all local applications except washing with water that had been boiled, and I found that the

local disease yielded with remarkable rapidity in nearly all the cases.

I employ the iodide of arsenic in solution in water. This solution should be prepared cold, in order to avoid decomposition of the product.

From one to twenty drops of a one per cent. solution may be given daily, according to the age of the child, always beginning with the minimum dose and increasing it progressively to the limit of tolerance. Large doses may cause diarrhœa, loss of appetite, sleeplessness, nervous disturbance and other trouble in susceptible children; the remedy should then be omitted for a few days and again resumed in the same way as before. The results have been sometimes marvellous, and in nearly every instance have been entirely satisfactory.

MEDICAL TREATMENT OF EPILEPSY.—M. Maurice de Fleury, in opposing the surgical treatment of epilepsy so strongly urged of late in some cases (La France Médicale, 29th April last), earnestly recommends the hygienic and medical treatment of that disease heretofore relied upon.

M. de Fleury recommends two distinct courses to be pursued—one directed to the hygiene of the digestive system, the proper diet to be recommended, the washing of the intestines, washing the stomach, and other similar measures; the other directed to the organs of circulation, as heart tonics, saline injections, etc. The injections materially increase the effects of the bromides with which they should be associated; they have, besides, the advantage of being diuretics, of relieving arterial pressure, of helping to maintain the integrity of the mental functions. In severe cases Dr. de Fleury proposes bleeding and the transfusion of serum combined; this treatment founded on the idea that many cases of epileptic disease are due to troubles of the digestive system, followed by auto-intoxication, in which case this treatment affords results distinctly superior to that by the bromides alone.

There are cases that will not yield to any kind of treatment. Some depend on vicious habits that are never abandoned. A case that was followed for years resulted in idiocy, in which condition the patient died from exhaustion when about twenty-six years of age.

In another, equally severe, the convulsive attacks were sufficient in almost every seizure to dislocate the shoulders, rendering

surgical aid to replace them necessary; later on the attacks returned daily; at length several times a day, and finally it was impossible to retain arms in their natural condition; dislocation is permanent, and although distressing affords no hope for relief. This case was a remarkably bright but unusually nervous child, whose tendency now is to the complete loss of mental power and self-control.

ALKALIES IN DYSPEPSIA.—M. Meathien, in discussing the subject (La France Médicale), does not think that the prolonged use of alkalies is likely to produce hyperchloridia.

On the contrary, it may be affirmed that the continued use of alkalies does not modify the chemical condition of the stomach in such cases. But in every case the bicarbonate of soda causes relief of the pain almost immediately.

For the same reason the absorption of mineral waters, which have been so unsuccessful in the hands of M. Hayem, do not have any injurious effects on the chemical condition. Besides this—chimisme stomacal—is not the only condition to be considered in such cases; the sensibility, the movements of the stomach, are of equal importance.

Such cases are usually attended with distressing flatulence, especially in females of a nervous temperament; they are generally relieved by bismuth-subgallate with bicarbonate of soda if there is an excess of acid. The relief becomes permanent if these measures are followed by full doses of peptenzime as prepared by Reed & Carnrick.

MALT EXTRACT?—A case of some interest to physicians and chemists was recently tried in the United States Superior Court at Dedham, Mass. The charge was against a druggist in Quincy of maintaining a common nuisance by the sale of malt extract. The district attorney prosecuted, and the trial lasted three hours. The sale was admitted. Analysis showed that the extract contained over 5 per cent. of alcohol. Professor Sharples called it "porter" and a "beverage." The defense was that it was a medicine and not a beverage. A verdict of guilty was returned. Mr. H. H. Fayon, on whose complaint the government took action, states that he has the analysis of 17 samples of malt extracts containing from 3.35 to 8.88 per cent. alcohol, and 11 others showing from 3 to 9.86 per cent.

THE NINTH INTERNATIONAL SANITARY CONGRESS.

At the close of the International Congress of Hygiene and Demography held at Budapest in 1894 it was resolved to hold the next triennial session in 1897 at Madrid. The disturbed condition of Spanish politics last year led to its postponement. Although the conditions had not materially improved the Committee determined to announce the first session for the 10th of April last, on which day it was opened.

The Queen regent was represented by Senor Trinitano Ruiz de Capdepon, Minister of the Interior. M. Julian Collega, dean of the Faculty of Medicine of Madrid, permanent President of the Congress, delivered the opening address. After alluding to the condition of the government and the consequent difficulty of making satisfactory arrangements for the Congress, he dwelt at length on the services that Hygiene may render to humanity, and to people in every clime and in every civilized country.

The great expense of hygienic measures, the opposition they may meet with from commercial organizations and from individuals, should never be allowed to prevent the enforcement of reasonable restrictions. The expense is soon compensated for by the preservation of the health and the lives of the citizens.

Dr. Amalio Gimeno, Secretary-General of the Congress, Professor in the Faculty, and Senator, took special pains to show the great care taken by Government and the Spanish universities to enforce all proper hygienic measures.

The Count de Ramanones, Mayor of Madrid, welcomed the delegates in the name of the people and expressed the pleasure it gave all the inhabitants of the city to greet the members of the Congress, and to bid them a cordial welcome. The foreign delegates expressed their gratification at the cordial reception given them.

There were 50 English, 48 Germans, 35 Austrians, 13 Belgians, 3 Danes, 110 French, some Hollanders, 14 Italians, 4 Roumanians, 10 Russians, 9 Swiss, 6 Turks, 3 Chinese, 10 Japanese, many South Americans and Mexicans, and two from the United States. Every country in Europe was represented, Spain by 600 members.

The representative of the United States avoided any allusion to the international differences. The Mexican delegate reminded

them, amid enthusiastic acclamations, that to Spain was due the discovery of America and much of its present advanced civilization.

M. Brouardel assured them that the International Committee made a very fortunate choice when they decided that the Ninth session of the Convention should be held in Madrid. Thanks to the efforts made, the Convention will be followed by very important results. We know that in Spain the conviction exists of the necessity of scientific measures, and in previous international Congresses, as well as in the meetings in Paris and Venice, we had ample opportunity to judge of the competency of our colleagues from Spain.

This Hygienic Congress is the last that will be held in the Nineteenth Century—a century that has done more for the health of the people than all the preceding centuries. Many short addresses followed by other members.

At the conclusion of this session the Queen regent, with King Alphonso XIII., opened the Congress formally, and after the presentation of the delegates the Congress was declared duly prepared for the regular business. The day closed with a brilliant entertainment at the Théâtre de la Comédie.

Most of the nations represented sent delegates from their military and naval service.

The National Committee deserve the greatest praise for the arrangements for the Congress in every particular, professional and social; and, the situation of the country considered, the whole was a great surprise to the foreign delegates.

Among the interesting communications presented was one from Behring, of Magdebourg, on the toxine of tuberculosis; a remarkable study on the toxine of typhoid and on the antitoxic serum of typhoid fever by Chantemesse, of Paris. The serotherapy of typhoid fever seems to be now fully established. Loeffler presented a paper on aphthous fever; M. Ferré a comparative study on diphtheria in birds and in human beings, and Boré, of Paris, on different kinds of tetanus.

The Congress was particularly remarkable for the warm official interest of the Spanish authorities in it. There was not only not a particle of political tension manifest, but the scientific loyalty of the prominent personages who participated in the proceedings was a striking feature. T. P. C.

SOME PUBLIC SCHOOL NEEDS.

By Austin Thorndike.

Most of us have rightfully a broader estimation of education than that possessed by Mr. Tulliver in "The Mill on the Floss." He merely thought,

> "When land is gone and money is spent,
> Then learning is most excellent."

Yet sometimes it seems as if the manner in which learning is imparted to the youth of to-day presupposes a similar making of its use a *dernier ressort*. It would appear, indeed, as if in many ways the citizens of the city of Boston had rested on the reputation of their schools in the past to supply food for admiration in the present—which that reputation has proven itself incapable of doing.

The average citizen sits him down and smugly reflects that the free educational system of this land is the best known. He smiles when he descries a fresh lot of immigrants arriving at East Boston and making their way, with a trail of young ones attached, toward the North End. "The children are to benefit by our public schools," he reflects placidly. Every time a new list of "ologies" is mentioned his bosom, like that of the British sailor in "Pinafore," swells with pride that so much should be given the youth of the land for nothing. He reflects on his own "schooling," which comprised the three R's, and very little else.

All this he does in case there are no children in his own family that are in attendance at the public schools. When the latter becomes the case his reflections are of a different sort. He finds that young Joe gets out of his school life a smattering of all sorts of knowledge that makes his head like a badly packed trunk. It has within it a lot of things for which he has no use, so tightly packed against the useful articles that the latter may not be obtained without exercise of infinite trouble. Joe cannot spell, his reading is something to be dreaded, history he repeats like a parrot, without a thought that it is linked to to-day's events, while his handwriting is ever in a state of transition. No sooner has he partly mastered the Spencerian hand than he is told to practise the

vertical, and it will be a wonder if another change does not come before he finishes his school life.

And where do the youth of the land spend five hours of each day? In a schoolroom that is possibly washed once a month, more likely only once a year, when in August there is the great end-of-vacation cleaning. Possibly he is learning the rudiments of good manners from his instructors, possibly not. The matter rests solely with the instructor. Rudeness may naturally accompany unsanitary conditions, and often does.

This was shown recently to a Boston citizen in the case of two boys whose ages placed them in different school buildings. The boys' mother found occasion to visit both schools, and the manner in which she was treated furnished food for thought. At the first she was compelled to wait a long time in a draughty vestibule before anyone came to inquire as to her wishes, then a dirty boy slouched out and said gruffly, "Teacher's busy, come again." Turning with indignation from this building she went to the other. Here she was met at the door by a polite boy who took her name intelligently and offered her a chair. In a few moments the child returned to say that the master would come out as soon as possible, and it is unnecessary to add that this courteous treatment was equalled by the interest with which the instructor listened to what she had come to say.

At the present time, as has been discovered by those in higher authority than myself, the teachers, as well as the superintendents of school buildings, have at once too much and too little authority. A master in a building is an autocrat with powers like those of the Czar in making the atmosphere, mental and moral, of his building what he will, but a superintendent, while given facility of seeing abuses, has almost no power to abolish them. According to Dr. Edward Everett Hale our several supervisors "oversee, they rush about from place to place, and see this and that, but they have not the power of a hair to change this or to change that."

Dr. Hale mentions the unsanitary condition of many schoolhouses, especially as regards the schoolroom floors. These, soiled with the mud of the playground and the nameless filth of the streets, coming from scores of dirty shoes, ought to be washed at least as often as a hospital ward, where there is almost no tracking in of outside nastiness. Yet in most of the neatest schoolrooms the washing is infrequently done, the only attempt at cleanliness between whiles consisting of a stirring up of microbes

and germs by a matutinal sweeping. Says Dr. Hale on this point: "There is nothing in the constitution of Massachusetts about scrubbing schoolroom floors. There is nothing in the bill of rights about it. There is nothing in the statutes of the commonwealth, nothing in the ordinances of the school committee. And I have been told that, when it was gently intimated to a janitor that it would not hurt a certain floor to make acquaintance with soap and water, he resented the suggestion as an interference with the 'inalienable rights' of janitors."

It is encouraging to notice that existence of these and other evils has aroused certain influential people to drafting a bill for presentation to the legislature. This was drawn up by a committee composed of Dr. Samuel Eliot, Dr. H. P. Bowditch, Mr. R. C. Humphreys, Mr. Edwin D. Mead, Mr. James P. Monroe, Rev. Charles F. Dole and Mr. John F. Moors. Furthermore, it embodies a plan of the late Gen. Francis A. Walker, and pledged to its support already are the Twentieth Century Club, the Municipal League, the Woman's Education Association and the Boston Branch of the Association of Collegiate Alumnæ. The bill embodies these three ideas—centralization of responsibility, appointment of a board of visitors, and a school faculty selected from the teaching force of the city.

The schools of Boston certainly stand in need of all these reforms. By centralization of authority will come eradication of that comprehensive business which, being known as everybody's, is done by nobody. The appointment of a board of visitors will bring the home and school into touch with each other. It may pave the way for other visits even more necessary—those of parents. It is certainly not right that parents should be utterly strange to the places in which their children spend a good proportion of their waking hours, yet they are strange because they generally find themselves unwelcome.

The last mentioned reform will place teaching on a more practical basis, there will be less incongruity between theory and practice—perhaps also less theory of the visionary sort, and certainly, one hopes, less counselling of such innovations as radical changes in handwriting or change in the system of teaching geography or grammar, which generally results in bewildering the mind of the pupil at the very moment when such bewilderment is fatal to scholastic advancement.—From "Boston Home Journal," March 12, 1898.

EDITOR'S TABLE.

SANITARIAN, JUNE NUMBER, 1898.

DIRT AND YELLOW FEVER.

Our justification for appropriating so much space to the discussion of yellow fever and the proposed measures to prevent its introduction, in this and recent preceding numbers, is based upon knowledge of its inviting and sustaining conditions. There is not probably an intelligent person, doctor or otherwise, who has lived a dozen years on the Gulf coast of the United States who does not recognize the danger of fever from freshly upturned soil during the summer and autumnal months—soil that has been perpetually liable to the soakage of surface deposits, that has never been subject to a freezing temperature, that is not underdrained; soil that is, in short, the indigenous home of microphytes, necessary to the putrefaction and transformation of the organic matter there accumulated and constantly accumulating to its original elements; and among these microphytes are the dangerous bacteria, or those which become so under the changed conditions of being "freshly turned up" and exposed to a higher temperature, and other conditions promotive of their activity and transportation in and to other congenial places. This is the kind of soil which obtains in a superlative degree in Havana, and in the mud of her harbor, that is so dangerous to vessels liable to soakage for lying there. The vulnerability of our Gulf coast harbors and cities to the introduction of yellow fever, or its revival, is indicated proportionally with the conditions here briefly depicted.

Thorough surface cleanliness and gutter flushing, as now practised in New Orleans, are commendable measures, but they are at best superficial and ineffective, and, as New Orleans' experience has abundantly shown, not to be depended upon. *Soil drainage* and the disposal of excrement by sewerage or some other means, without its ever having reached the surface soil, are measures which hundreds of the intelligent citizens of New Orleans have recognized the necessity of for many years. Yet the civil authorities there have chosen to incur occasional epidemics of yel-

low fever at the cost of millions, rather than the needful measures that have been pointed out, at the cost of thousands.

What is here said of New Orleans applies with equal force to Mobile and other Gulf coast cities.

Meanwhile the quarantine measures and the authority to execute them, as proposed in the bill on other pages of this number, are eminently necessary; and it is greatly to be hoped that the bill may soon become a law.

EXTENSION OF RELIEF—THE MARINE HOSPITALS FOR ARMY AND NAVAL SERVICE.

WASHINGTON, D. C., May 2, 1898.

To Medical Officers of the Marine Hospital Service:

The United States Marine Hospitals are hereby made available for the reception of the sick and wounded of either the United States Army or the United States Navy, and you are hereby directed, upon a written request of the proper military or naval authority, to receive and care for said patients; the Marine Hospital Service to be reimbursed the actual cost of maintenance.

WALTER WYMAN,
Supervising Surgeon-General, M. H. S.

Approved:
L. J. GAGE, Secretary.

Executive Mansion, May 2, 1898.
Approved:
WILLIAM MCKINLEY.

A WHOLESALE EXPERIMENT IN YELLOW FEVER PREVENTION.—It has been reported that the army medical authorities have prepared a large supply of yellow fever antitoxin, and that all the unacclimated troops sent to Havana and other parts of Cuba will be inoculated by way of prophylaxis, and also that a thorough test of the curative properties of the serum will be made in all cases originating in the island.

THE CITY BOARD OF HEALTH'S RESERVE SANITARY CORPS.—The following is an extract from the minutes of a meeting of the Board of Health of the City of New York held April 13, 1898:

"Commissioner Jenkins presented the following preamble and resolution, which were adopted:

"'*Whereas,* Conditions may arise requiring the employment of a large number of experts who have had experience in this department, to prevent the spread of pestilential or epidemic diseases; therefore be it

"'*Resolved,* That all persons who have been employed in this department during the past twenty years be and are hereby respectfully requested to send their names and addresses to the secretary at this office, said names to be placed on a roll to be known as the Reserve Sanitary Corps.'"

RECENT APPOINTMENTS IN BROOKLYN.—The following appointments have been made in the Department of Health in the Borough of Brooklyn: Drs. James J. H. Blakeney, James T. Gallagher, Charles H. Ermentraut, and Eugene J. Kenney, medical inspectors, and Dr. Peter C. Hughes, diagnostician.

THE INTERNATIONAL HEALTH EXPOSITION, held during the past two months in New York, was eminently worthy of the encomiums of the public press bestowed upon it. Indeed, it is to be regretted that more was not published with special reference to its most important features, as an educational force of interest to everybody. For, while it possessed the usual and commonplace attractions of sanitary exhibits, it presented besides, practical lessons in household economies, dairy sanitation, hospital hygiene, emergency appliances, and, most striking of all, the status and efficiency of the trained nurses, not merely as an attendant on the sick, but for skill in the use of means for the prevention of sickness, as never before exhibited. The models of the wards of several of the hospitals of New York and Brooklyn, and of some of other cities, were practical lessons well calculated to do away with the still lingering prejudices of some minds against their advantages over household conditions. Moreover, the contrast of hospital conditions of a generation ago and the present were alike well displayed.

Near the entrance of the exhibit of the New York Hospital there were two rooms fitted up representing the old and the new sick room. In the first the inimitable Sairey Gamp ensconced in her easy chair, with her wee drop near, her teapot on the hearth and a cold bite spread on the secretary. Paregoric, salts and tar salve within reach; so all emergencies were provided for. The old-fashioned English room cleverly reproduced, and a patient

lying under the canopy of a huge four-poster. But the patient cut but a sorry figure. Sairey dominated the scene. Alongside of this room was the model sick room of the present day, with a trim and immaculate nurse as presiding genius; and, while one's affections cling to Sairey, one has to confess the superiority of modern ideas in regard to the sick rooms.

Unfortunately for our readers who missed the opportunity of visiting the exhibit, this reference is too late to be of practical benefit. The exhibition opened when it was too late for us to notice it in our May number, and will have closed ere this number reaches the reader.

The Exposition was eminently creditable to Mr. Wingate, the supervising director, and his associates, and it is sincerely to be hoped that their encouragement has been such as to justify its repetition a year hence.

THE GERM THEORY BEFORE THE CHRISTIAN ERA.—Dr. Charles W. Dulles (University Medical Magazine, May) quotes, at the instigation of Prof. Alfred Gudeman, the following passage from Varro, De Re Rustica, Book I., chapter XII., as a pre-Christian conception of the germ theory: "Advertendum etiam, si qua erunt loca palustria et propter easdem causas et quod arescunt et quod in iis crescunt animalia quædam minuta quæ non possunt oculi consequi et per aera intus in corpus, per os ac nares, perveniunt atque efficiunt difficiles morbos." (It must also be borne in mind if any places are marshy, not only for the same reasons, and because they become dry, but because also in them certain minute animals not traceable by sight grow in them, and, finding their way through the air into the body by way of the mouth and nose, bring about grave diseases.)

SANITARIA FOR TUBERCULOUS PATIENTS.—In Germany, Stettin has an institution with accommodations for eighty inmates, erected at an expense of 350,000 marks; one in Thuringia is to be opened in July, and others at Wiesbaden and Munich are progressing favorably. The Congress of Naturalists and Physicians, which is to convene at Dusseldorf in September, has appointed a standing committee for this matter. We notice in this connection the negative results obtained from an exhaustive study of the vital statistics of the region surrounding Davos in the Engadine, from which it appears that the population living in and around tuberculous

resorts are not exposed to greater danger of contagion than others elsewhere.

A DIET CURE.—There is reported to be a Jew, a native of Litsk, Russia, living in the East End of London, who has fasted for twenty years, his sole daily diet during that time consisting of six pints of milk, three pints of beer and a half pound of Demerara sugar. His name is Morris Fox. He is an excellent Talmudical scholar, and in spite of his frugal meals he is the most healthy, intelligent and wideawake person in his quarter. He is now over forty. At the age of seventeen, it appears, he caught some lingering fever which shattered his constitution and entirely destroyed his digestive organs. He took many kinds of treatment from physicians, until his stomach became inured to all medicine. At the Kieff Hospital they vainly tried to cure him by sponging and electrolysis; at Vienna his physicians included the well-known Drs. Albert and Northnagel. His treatment at Carlsbad was a failure; then he traveled to Königsberg, when the physicians decided that he must live on sugar, milk and beer. He adopted their prescription, and soon regained normal health. For twenty years no solid food has passed his mouth.

DIET DURING COURSES OF MINERAL WATERS.

Dr. F. Parkes Weber, writing in a recent number of "Treatment" on the dietary suitable for patients at mineral water resorts, says that C. von Noorden, Karl Grube, and many others have pointed out that the true rules of diet to be observed while undergoing a course of mineral water are the rules suitable to the individual constitution of the patient and the complaint from which he is suffering. Among articles of diet which were supposed to be specially unsuitable at Carlsbad, butter and fats were the most noteworthy because they are such extremely important foods. The mineral water was supposed to prevent their proper digestion and assimilation. Not only was fat prohibited with sulphated alkaline waters, such as that of Carlsbad, but with muriated waters, such as those of Kissingen and Homburg. Recently, however, F. Kraus has shown experimentally that a course of sulphated alkaline waters does not prevent the proper absorption and assimilation of the fat taken with other food; and C. Dapper had already proved the same to be the case in regard to courses of muriated waters, such as those of Kissingen and Hombu-

Kraus gave considerable amounts of fatty food to patients sufferink from complaints likely to be met with at Carlsbad, treating them at the same time with fair daily doses of Carlsbad (Mühlbrunnen) water, and he found that the percentage of the ingested fat which could be recovered again in the feces of these patients was not unduly increased by the use of the mineral water. Dr. Parkes Weber hereupon remarks that a fatty diet gives rise to trouble in certain cases independently of spa treatment, and in such cases the diet while the patient is at the spa will have to be regulated. For instance, patients who suffer from obesity or from gastric dilatation due to fermentation of the contents of the stomach must have their diet regulated with respect to fatty and fat-producing foods. There is no doubt that the facility for regulation of diet at some spas, such as Carlsbad, has greatly helped in their reputation for the treatment of certain affections, especially diabetes and obesity. Spas where by a strict *a la carte* system of dining the carrying out of dietetic rules is made comparatively easy are likely to outstrip their rivals where a *table d'hote* system prevails. Moreover, the strict quantitative limitation of the evening meal must have had, and still does have, a wholesome effect at many health resorts. The patients can go to bed earlier after a light meal—a great advantage when they have to rise at a very early hour to drink the waters—and in most persons when free from excessive mental work the digestive powers are probably strongest during the middle of the day. In many persons, also, temporary discontinuance of strong tea or coffee in the morning can do no harm, and can best be carried out at health resorts during periods of rest from the mental work of ordinary life. The substitution of farinaceous soup, etc., which formerly constituted the morning meal at various spas, might still often be recommended.—American Practitioner and News.

MORTALITY AND MORBILITY REPORTS AND REVIEWS.

Correspondents under this head are particularly requested to be as prompt as possible.

ALABAMA.—W. H. Sanders, M. D., State Health Officer, Montgomery.

Mobile, 37,817. Rhett Goode, M. D., Health Officer. Reports for three months—January, February and March: Deaths, 73, 50, 74—197. Annual death rate per 1,000 for the period, 20.83.

CALIFORNIA.—C. A. Ruggles, M. D., President, Stockton; W. P. Matthews, M. D., Secretray, Sacramento.

San Francisco, 360,000. A. P. O'Brien, M. D., Health Officer. Report for March: Deaths, 690—110 under five years. From zymotic diseases, 33; diphtheria, 9; typhoid fever, 6; cerebro-spinal fever, 5; phthisis, 112; bronchitis, 31; pneumonia, 76. Annual death rate, 22.92.

Los Angeles, 103,000. Q. M. Powers, M. D., Health Officer. Report for March: Deaths, 160. From phthisis, 29; acute pulmonary diseases, 17. Annual death rate, 19.1.

Sacramento ("Bee"), March 10.—It is estimated that there are at the present time about 200 cases of typhoid fever in this city.

COLORADO.—A. Stedman, M. D., President, Denver; Henry Sewell, M. D., Secretary, Denver.

Denver, 167,000. William P. Munn, M. D., Health Commissioner. Report for March: Total number of deaths, 149. Annual death rate, 10.71. The principal causes of death were: Phthisis (contracted elsewhere), 35; tuberculosis of all kinds, 45; diphtheria, 2; scarlet fever, 1; typhoid fever, 2; pneumonia, 10; heart diseases, 13; and nephritis, 5. Contagious diseases have continued to decrease in prevalence, there being but 23 cases of diphtheria, as compared with 28 in February; 20 cases of scarlet fever, as compared with 33 in February; and 13 cases of measles, as compared with 31 in February.

Colorado Springs, 22,000. B. B. Grover, M. D., Health Officer. Report for March: Deaths, 19—5 under five years. From tuberculosis (contracted elsewhere), 8. Annual death rate, 10.36.

CONNECTICUT.—Professor William H. Brewer, Ph. D., New Haven, President; Prof. C. S. Lindsley, M. D., Secretary, New Haven. The Secretary's bulletin for April reports the number of deaths, 1,197—75 less than in March, and 15 less than in April of last year, and 34 less than the average number of deaths in April for the five years preceding the present. The death rate was 15.8 for the large towns; for the small towns, 17.4; and for the whole State, 16.3. The deaths from zymotic diseases were 98, being 8.1 per cent. of the total mortality.

Annual Report for 1897, a volume, including Registration Report for 1896, of 550 pages. The number of deaths for the year ending August 31, 1897, was 13,805—1,040 less than for the pre-

ceding year, and 735 less than the average number for the five calendar years preceding 1897. This reduction is more particularly worthy of notice as evidence of progress in preventive medicine, because "it appears that the smaller number of deaths is almost exactly equalled by the diminished deaths from the contagious and infectious diseases." Of these typhoid fever is a prominent example—149, against 219 of the previous year, and an average annual mortality of 268 for the last ten years. And here follows a concise review of *the* preventive measure which has brought about the result—the pollution of the water and milk supplies, against which the board has waged and continues to wage unrelenting war. Gratifying progress has been made also in the prevention of pulmonary consumption, the number of deaths from this disease being 133 less than for the previous twelve months. From acute pulmonary diseases, pneumonia and bronchitis also, there was a reduction of 103 from the previous year's report. The registration of vital statistics for the year ending December 31, 1896, shows a death rate of 17.5 per 1,000 of population. The birth rate was 24.9 per 1,000.

DISTRICT OF COLUMBIA, 276,963—88,176 colored. Wm. C. Woodward, M. D., Health Officer, reports the mortality for four weeks ending April 30, 386. Death rates, 12.3 for the white, 24.5 for the colored, and 17.6 for the whole population. Deaths from zymotic diseases, 36; diphtheria, 10; consumption, 64.

ILLINOIS.—L. Adelsberger, M. D., President, Waterloo; J. A. Egan, M. D., Secretary, Springfield.

Chicago, 1,619,226. A. R. Reynolds, M. D., Commissioner, reports: Total deaths from all causes during the month of March, 1898 (white, 2,266; colored, 50), 2,316; monthly death rate, March, 1898, per 1,000 of 1,619,226 population (white, 1.42; colored, 1.89), 1.32; annual death rate, twelve months ended March 31, 1898, per 1,000 of mean population (white, 13.43; colored, 22.03), 13.73.

Deaths from diphtheria, 43; typhoid fever, 41; influenza, 116; consumption, 262; other tubercular diseases, 43; pneumonia, 378; bronchitis, 145. Contagious diseases reported during the month: Diphtheria, 182; scarlet fever, 67.

IOWA.—J. I. Gibson, V. S., President, Denison; J. F. Kennedy, M. D., Secretary, Des Moines.

State Board bulletin for April.—Diseases reported in March: Diphtheria—York township, Iowa county; Denison, Garwin. Scarlet Fever—Hudson, Black Hawk county; Grant township, Cerro Gordo county. Measles—Marietta, Crawford county; Osceola, Clarke county.

LOUISIANA.—Edmond Souchon, President, New Orleans; G. F. Patton, M. D., Secretary, New Orleans.

New Orleans, 275,000—80,000 colored.

Enlargement of the State Board.—The recent Constitutional Convention adopted an ordinance which provides that "the general assembly shall enact laws creating and defining the duties and powers of a State Board of Health, composed of representative physicians from the various sections of the State, of boards of health for each parish in the State; of boards of health for towns and cities incorporated under the laws of the State; provided, that the President and Secretary of the State Board of Health shall be ex-officio members of the Board of Health of the city of New Orleans, and the president of the State Board shall be the president of the Board of Health of the city of New Orleans. The general assembly shall have the power to repeal or amend the provision making the president and secretary of the State Board ex-officio members of the Board of Health of the City of New Orleans."

MARYLAND.—John Morris, M. D., President, Baltimore; John S. Fulton, M. D., Secretary, Baltimore.

At the regular meeting of the State Board, April 14, the secretary reported the passage by the Legislature of a vital statistics law and an act requiring notification of infectious diseases. The vital statistics law requires physicians to report deaths to the local health officers, who in turn report monthly to the State Board of Health. The secretary of the State Board of Health is the State Registrar of Vital Statistics.

Baltimore, 506,398—73,344 colored.—G. Hampson Jones, M. D., Health Commissioner, reports for March: Total deaths, 999, an increase of 134 compared with the corresponding month of March, 1897. Of these 742 were whites and 257 colored; a death rate of 20.65 per thousand for the former and 41.12 per thousand for the latter. The death rate per thousand for the whole population was 23.68. 68 died from infectious diseases, 119 from consumption, 188 from pneumonia, 35 from bronchitis, 4 from influenza, 32 from Bright's disease, 25 from nephritis, 30 from apoplexy, and 16 from typhoid fever. 355 or 35.53 per cent. of the total deaths were in children under five years of age.

102 deaths occurred in public institutions, of which 31 were reported as non-residents. Cases of infectious disease reported: Diphtheria, 102; typhoid fever, 11; scarlet fever, 69; measles, 277; whooping cough, 54; varicella, 23; mumps, 8—544.

MASSACHUSETTS.—H. P. Walcot, M. D., Chairman, Cambridge; S. W. Abbott, M. D., Secretary, Boston.

Boston, 516,305. Samuel H. Durgin, M. D., Chairman of Board of Health.

Boston "Herald": The new bacteriological laboratory of the Board of Health, said to be the finest in America, opened for business yesterday (May 11th) under the direction of Dr. Hibbert Winslow Hill. Architecturally, the laboratory is simplicity itself. From a business point of view, it is most complete, however, the best modern implements having been obtained by Dr. Hill, who has worked in nine different laboratories and fitted up six, so that he has been enabled to give to his latest plant the benefit of a wide experience. Dr. Hill was educated at Johns Hopkins University, where he worked in the laboratory under Prof. Welch. He was also director of the Brooklyn laboratory, and has been employed in laboratories in Philadelphia and Louisville. He has been associated with such men as George W. Fuller, formerly of Lawrence, but now in Cincinnati, one of the most noted bacteriologists in this country, and with Dr. B. Mead Bolton, late of Philadelphia, but now bacteriologist at Princeton for the State Board of Health of New Jersey.

MICHIGAN.—Hon. Frank Wells, President, Lansing; Henry B. Baker, M. D., Secretary, Lansing.

The Secretary reports for the month of April: Including reports by regular observers and others, consumption was reported present in Michigan in the month of April, 1898, at 147 places, measles at 117 places, scarlet fever at 50 places, diphtheria at 43 places, typhoid fever at 37 places, whooping cough at 19 places and small-pox at 1 place.

Reports from all sources show consumption reported at 10 places more, measles at 17 places more, scarlet fever at 19 places less, diphtheria at 9 places less, typhoid fever at 25 places less, whooping cough at 3 places less and small-pox at 1 place less, in the month of April, 1898, than in the preceding month.

The total number of deaths in the State returned for the month was 2,689; the largest number returned for any month since the

beginning of registration, but exceeds the previous month by only three deaths. As April has one day less than March, an increase of the annual death rate is shown from 13.8 to 14.3 per 1,000 estimated population. There were 438 deaths of infants under one year of age, and 181 deaths of children aged from one to four years. Consumption caused 235 deaths, only two more than in March; typhoid fever, 26; diphtheria and croup, 29; scarlet fever, 8; measles, 18; whooping cough, 24; pneumonia, 329; diarrhœal diseases of children, 47; cerebro-spinal meningitis, 38; influenza, 128. Pneumonia has begun to decline in importance as a cause of death, although still much more fatal than any other individual disease. Diarrhœal diseases of children are increasing in importance with the advent of warm weather, and influenza showed a considerable increase over the preceding month. Many deaths reported from the latter cause, however, were deaths from acute diseases of the respiratory organs, in which influenza played the part of an accessory cause.

MINNESOTA.—Franklin Staples, M. D., President, Winona; H. M. Bracken, M. D., Secretary, St. Paul.

Minneapolis, 225,600. H. N. Avery, M. D., Commissioner of Health; Miss Edwina J. Peck, Registrar of Vital Statistics. Report for April: Deaths, 221—93 under five years of age. From zymotic diseases, 42; typhoid fever, 6; measles, 19; phthisis pulmonalis, 22; pneumonia, 23. Annual death rate, 8.62. Cases of contagious diseases reported during the month: Diphtheria, 14; scarlet fever, 5; measles, 490; typhoid fever, 14.

Minneapolis, Minn., April 17, 1898.—Dr. H. U. Avery, Commissioner of Health of this city since 1894, was found dead in bed at Forman, N. D., this morning. Death was caused by heart disease. He was sixty years of age, and widely known in medical circles of the Northwest.

St. Paul, April 14, 1898.—The State Board of Health held its quarterly meeting yesterday and adopted new rules, as recommended by the Secretary, governing the preparation and removal of dead bodies. The rules are strict as to the preparation of the bodies, and they are intended to guard thoroughly against the spread of disease by this means. They provide that undertakers and embalmers must pass an examination and receive a license before they can be allowed to prepare for shipment the bodies of those who have died of infectious diseases.

St. Paul, 215,582. Alex. J. Stone, M. D., LL.D., Commissioner

of Health. Report for April: Deaths, 168—61 under five years of age. From infectious diseases, 50; phthisis, 23; measles, 9; tubercular meningitis, 5; typhoid fever, 3; diphtheria, 3; pneumonia, 38. Annual death rate, 9.34.

MISSOURI.—E. L. Standlee, M. D., President, St. Louis; Paul Paquin, M. D., Secretary, St. Louis.

St. Louis, 623,000—36,000 colored. M. C. Starkloff, M. D., Commissioner of Health, reports for March: The annual death rate per 1,000 during the month was 15.18, this being based on a population of 623,000, computed on census figures of 1890 (460,000), at the rate of four per cent. annual increase. During the month there were 80 more deaths than the previous month. Forty-one certificates were issued for deaths occurring outside the city limits; these were not included in the monthly statement. Percentage of deaths in eleemosynary and other institutions of a public character to total mortality, 22.46. Percentage of deaths in city institutions to total mortality, 13.57. White population, 587,000; mortality rate per thousand, 14.16. Colored population, 36,000; mortality rate per thousand, 31.65. The annual death rate per 1,000 during the year 1897 was 15.92, this being based on a population of 600,000. During the year there were 343 deaths less than the previous year. 458 certificates were issued for deaths occurring outside the city limits; these were not included in the yearly statement. Percentage of deaths in eleemosynary and other institutions of a public character to total mortality, 12.7. Percentage of deaths in city institutions to total mortality, 24. White population, 565,000; mortality rate per thousand, 14.84. Colored population, 35,000; mortality rate per thousand, 33.20.

NEBRASKA.—Winnemucca, April 22.—The State Board of Health has organized with the following officers: Dr. Guinan, of Carson, President; Dr. S. C. Gibson, of Reno, Vice-President, and Dr. W. H. Patterson, of Reno, Secretary.

Omaha, 140,452. S. K. Spalding, M. D., Health Commissioner.

Report for March: Deaths, 81—29 under five years of age. From phthisis, 11; pneumonia, 6. Death rate, 6.9.

NEW JERSEY.—C. F. Brackett, M. D., President, Princeton; Henry Mitchell, M. D., Secretary, Asbury Park.

Newark, 230.000. Health Officer Chandler reports for the five weeks ending April 30: Deaths, 383—87 under five years of age;

from diphtheria, 9; consumption, 64; pneumonia, 47. Annual death rate, 16.94.

Paterson, 110,288. J. L. Leal, M. D., Health Officer, reports for March: 152 deaths—40 under five years of age. Annual death rate, 13.78. Deaths from diphtheria, 7; typhoid fever, 1; consumption, 27; pneumonia, 19.

NEW YORK.—Daniel Lewis, M. D., President, New York; B. T. Smelzer, M. D., Secretary, Albany.

The Secretary's bulletin for March reports an increase in the mortality from the preceding month from 17.60 per 1,000 population annually to 18.25; the death rate of March, 1897, was 20.50, representing an annual mortality of 135,000 against one of 122,300 this month, there having been reported then 1,300 more deaths. Compared with February, there was a small increase in the relative mortality in early life and also in deaths from zymotic diseases. Of the latter, the increase has been in measles, whooping-cough and cerebro-spinal meningitis. Measles caused 144 deaths, which is nearly double the number of February; deaths were reported from every sanitary district except the Lake Ontario and Western, but the chief increase in the maritime district; the total mortality is the same as that of last March. Whooping-cough caused 89 deaths, against 47 in February; deaths are now reported from every sanitary district, while in February there were but 8 deaths from this cause outside the maritime district; during last March 112 deaths were credited to it. Cerebro-spinal meningitis caused 75 deaths, against 53 in February, the Adirondack and Northern and the West Central districts making no returns from it, one-half the deaths occurring in the maritime district, an epidemic limited in area is reported from Cohoes, and its special prevalence has been in several other places (Massachusetts reports show the same); it has a larger mortality than a year ago. There were 119 deaths from typhoid fever, which is somewhat excessive. Diphtheria has the same moderate prevalence as of recent months, the 280 deaths from it being less by 100 than in March, 1897, and is less than half the average of the past ten years. The total zymotic mortality was about 100 less than a year ago. Acute respiratory diseases caused a smaller daily mortality than in February, and 600 less than in March of last year; other local diseases showing no material variation except circulatory diseases, which are less by 230; unclassified causes were credited with nearly 400 more deaths a year ago. Grippe was estimated to have caused 1,500 deaths last

March, there having then been a sudden increase in its prevalence; it may be estimated this month to have caused about the same mortality as in February, viz., 600. The weather during the most of the month was unusually mild, the average temperature having been 40°, the average for twenty-eight years being 31°; there were an unusual number of clear days, the precipitation was deficient, the mean barometer 30.19, winds southwesterly and of moderate velocity.

New York City, 3,438,899. Michael C. Murphy, President; W. T. Jenkins, M. D., and J. B. Cosby, M. D., Commissioners of Health; Emmons Clark, Secretary; Charles F. Roberts, M. D., Sanitary Superintendent; Roger S. Tracy, M. D., Registrar of Records.

Borough of Manhattan, 1,911,755. Frederic H. Dillingham, M. D., Assistant Sanitary Superintendent; Thomas C. Taylor, M. D., Assistant Registrar of Records. Deaths, 3,024—175 under five years; death rate, 18.62; deaths from zymotic diseases per 1,000 deaths from all causes, 114.40; from typhoid fever, 14; scarlet fever, 60; diphtheria, 100; acute respiratory diseases, 634; consumption, 361.

Borough of Bronx, 137,075. Eugene Monogan, M. D., Assistant Sanitary Superintendent; Arthur J. O'Leary, M. D., Assistant Registrar of Records. Deaths, 352—130 under five years; death rate, 30.00; from zymotic diseases per 1,000 from all causes, 200.

Borough of Brooklyn, 1,197,100. Robert A. Black, M. D., Assistant Sanitary Superintendent; Sylvester J. Byrne, M. D., Assistant Registrar of Records. Deaths, 905—611 under five years; death rate, 18.75; deaths from zymotic diseases per 1,000 from all causes, 105.00; typhoid fever, 13; diphtheria, 106; acute respiratory diseases, 373; consumption, 223.

Borough of Queens, 128,042. Obed L. Lusk, M. D., Assistant Sanitary Superintendent; Frank Wickham, M. D., Assistant Registrar of Records. Deaths, 90—57 under five years; death rate, 17.50; deaths from zymotic diseases per 1,000 from all causes, 42.

Borough of Richmond, 64,927. Geo. C. Hubbard, M. D., Assistant Sanitary Superintendent; J. Walter Wood, M. D., Assistant Registrar of Records. Deaths, 97—20 under five years; death rate, 17.57; from zymotic diseases per 1,000 from all causes, 30.

Totals: Deaths, 5,568—1,993 under five years of age; death

rate, 19.06; deaths from zymotic diseases per 1,000 from all causes, 112.45; deaths from typhoid fever, 27; scarlet fever, 90; measles, 113; diphtheria, 223; acute respiratory diseases, 1,138; consumption, 705.

Buffalo, 360,000. Ernest Wende, M. D., Health Commissioner, reports for March: Deaths, 27—89 under five years; death rate, 10.70; from zymotic diseases per 1,000 from all causes, 113.15; diphthéria, 7; typhoid fever, 11; acute respiratory diseases, 50; consumption, 36.

Rochester, 175,000. George W. Goler, M. D., Health Officer. Report for March: Deaths, 199—50 under five years; death rate, 14.02; from zymotic diseases per 1,000 from all causes, 25; diphtheria, 3; acute respiratory diseases, 42; consumption, 22.

Albany, 100,000. Report for March: Deaths, 169—39 under five years; death rate, 1.20; from zymotic diseases per 1,000 from all causes, 125; typhoid fever, 8; diphtheria, 5; acute lung diseases, 20; consumption, 14.

Syracuse, 120,000. Report for March: Deaths, 128—30 under five years; death rate, 12.80; from zymotic diseases per 1,000 deaths from all causes, 100; acute lung diseases, 12; consumption, 11.

North Carolina.—George G. Thomas, M. D., President, Wilmington; Richard H. Lewis, M. D., Secretary, Raleigh.

The April Bulletin summarizes the mortality for March, from twenty-two towns, with an aggregate population of 119,960—53,321 colored. Aggregate deaths respectively, 134—61 white, 73 colored—representing annual death rates, 11; 16.4; 13.4. The causes of death were, in the order of the greater prevalence: Consumption, 29; pneumonia, 17; heart disease, 13; brain diseases, 4; typhoid fever, 4; diarrhœal diseases, 3. Deaths under five years of age, 31—21 colored. Still-born, 12—9 colored.

Ohio.—S. P. Wise, M. D., President, Millersburg; C. O. Probst, M. D., Secretary, Columbus.

State Board Bulletin for April reports cases of infectious diseases for five weeks ending April 2, from 59 places, aggregating a population of 1,368,100: Diphtheria and croup, 136—27 deaths; scarlet fever, 149—5 deaths; typhoid fever, 138—22 deaths; whooping-cough, 206—18 deaths; measles, 2,436—24 deaths.

Cincinnati, 405,000. J. M. Winthrow, M. D., Health Officer, reports for March: 536 deaths—68 under five years of age. An-

nual death rate, 15.88. From consumption, 66; pneumonia, 71; bronchitis, 31; diphtheria, 6; typhoid fever, 8; whooping-cough, 12.

Annual report for 1897: Total number of deaths, 5,565. Death rate, 13.7. Of deaths from special causes: Tuberculosis, 675, a decrease of 62 from the number of the preceding year, and less than for any year since 1878, attributed to the increasing education of persons associated with consumptives, leading them to exercise greater care for the destruction of the sputum. From typhoid fever there were 101 deaths—the smallest number recorded since 1879. This reduction is attributed primarily to the higher stage of the river, and secondarily—and the more important—to the growing custom among the people of boiling or filtering their drinking water. The constant effort of the Board to prevent the pollution of the water and milk supplies has served to intensify public attention to the subject and to render more and more odious the connivance or neglect of the purveyors in this regard. School inspection, the isolation of cases of infectious disease, dirt dumps, slums and disinfection are given merited attention, and the report altogether a gratifying evidence of aggressive sanitation.

Cleveland, 350,000. J. L. Hess, M. D., Health Officer, reports for the month of March: Deaths, 491—183 under five years. From diphtheria, 9; typhoid fever, 3; phthisis and tuberculosis, 54; pneumonia, 61; bronchitis, 23; measles, 6. Death rate, 15.92.

PENNSYLVANIA.—Pemberton Dudley, M. D., President, Philadelphia; Benjamin Lee, M. D., Secretary, Philadelphia.

Philadelphia, 1,240,266. Benjamin Lee, M. D., Health Officer, reports for the four weeks ending April 30: Deaths, 2,134—487 under five years of age. From diphtheria, 82; typhoid fever, 38; consumption, 207; pneumonia, 265. Annual death rate, 22.37.

Pittsburg, 295,000. Report for the five weeks ending April 30: Deaths, 482—193 under five years of age; consumption, 45; pneumonia, 38. Death rate, 17.

SOUTH CAROLINA.—Charleston, 65,165—white, 28,870; colored, 36,295. H. B. Horlbeck, M. D., Health Officer, reports for five weeks ending April 30: Deaths, 139—98 colored. Under five years of age, 42. Annual death rate—white, 14.76; colored, 28.7—27.8.

TENNESSEE.—W. J. McMurray, M. D., President, Nashville; J. A. Albright, M. D., Secretary, Somerville.

Memphis, 61,747—30,317 colored. Herbert Jones, M. D., President; Marcus Haas, M. D., Secretary. Report for March: Deaths, 126—71 colored. Annual death rates: White, 20.98; colored, 27.08—24.53. Deaths from phthisis, 18; pneumonia, 38.

WASHINGTON.—Seattle, 70,000. Clarence A. Smith, M. D., Health Officer and Secretary, reports for April: Deaths, 62. Annual death rate per 1,000, 10.62. Deaths from consumption, 2; pneumonia, 9; diphtheria, 3.

WISCONSIN.—Solon Marks, M. D., President, Milwaukee; U. O. B. Wingate, M. D., Secretary, Milwaukee.

Milwaukee, 275,000. Walter Kempster, M. D., Commissioner of Health, reports for March: Deaths, 271—99 under five years of age. Annual death rate per 1,000, 11.82. Deaths from whooping cough, 5; diphtheria, 4; typhoid fever, 1; consumption, 37; other tubecular diseases, 13; pneumonia, 35; bronchitis, 16; other respiratory diseases, 3.

OBITUARY.

With sorrow we record the death of our much esteemed collaborator, Dr. ISAAC NEWTON QUIMBY. He died of pneumonia, at his home in Jersey City, N. J., May 6. Dr. Quimby was born August 5, 1831, near Basking Ridge, N. J. He received his academic education at the Chester Institute, Chester, N. J., and his degree of M. D. from the University Medical College, New York, in 1859. Upon the breaking out of the civil war he entered the army as a volunteer surgeon. He served with General McClellan's forces in the Chickahominy, to the James River, and the retreat to Harrison's Landing; was at Antietam, and remained with his division until after the battle of the Wilderness, when, on account of illness, he returned to his home in Jersey City, and shortly after resumed practice. He soon acquired a large practice. He was the originator of (the Hudson County) Christ's Hospital, of which he was surgeon from its beginning, in 1868, until 1873. He was also, and up to the time of his death, one of the attending surgeons of the City Hospital. He has been for many years one of the most prominent medical practitioners in the State; one of the most active members of the American Medical Association; of the Hudson County

(Jersey City) District Medical Society. He was also member of the American Public Health Association, N. Y.; American Association for the Cure of Inebriety, Medico-Legal Society, Society of Jurisprudence and State Medicine, the American Medical Temperance Association, and of the Mississippi Valley Medical Association. He was honorary member of the British Medical Association and of the Gynæcological Society of Boston. He was a delegate from the American Medical Association to the International Medical Congress, London, 1881, in Copenhagen, 1884, and in Rome, 1894. He was member of the First Pan-American Congress, Washington, 1893. At the meeting of the American Medical Association last year he was appointed chairman of the Section on State Medicine, and when overtaken by his last illness he was engaged in preparing his address on State Medicine in New Jersey for delivery at the forthcoming meeting of the association at Denver. Dr. Quimby devised several important improvements in surgical operations, described in the Transactions of the American Medical Association. He gave many addresses and contributed several essays on prohibition, of which he was an ardent votary, published in the Journal of Inebriety and other periodicals.

Dr. Quimby was twice married, first in 1863 to Miss Helen Stark McKie, who died in 1868, leaving one child, a son, Alfred Charles Post Quimby, who survives. Second, in 1875 to Miss Frances H., daughter of the late James Fleming, of Jersey City, who, and one son, Isaac Newton Quimby, Jr., survive.

At a special meeting of the staff of the Jersey City Hospital, held on Saturday, May 7, the following resolutions were unanimously adopted:

Whereas, Dr. Isaac N. Quimby, for many years a member of the Jersey City Hospital staff, has been removed by death, therefore be it

Resolved, That we, members of the staff, fully realize how great is our loss in being deprived of the kindly counsel and companionship of our late associate.

Resolved, That we feel that by his death, not only among ourselves but in the community at large, a vacancy has been created which cannot easily be filled.

Resolved, That we tender our most sincere sympathy to his family in their sad bereavement.

Resolved, That a copy of these resolutions be published in the daily papers of the city and in the prominent medical journals of the country.

MORTALITY STATISTICS ABROAD FOR THE YEAR 1897.

Population, total mortality, annual death-rate per 1,000, and deaths from measles, typhoid fever, diphtheria and consumption.

London, 4,463,169; 80,946; 18.1; 1,925; 593; 2,332; 7,861. Glasgow, 714,919; 15,656; 21.9; 561; 179; 195; —. Liverpool, 633,078; 15,384; 24.3; 340; 168; 126; —. Manchester, 534,299; 12,307; 23.0; 630; 98; 48; —. Birmingham, 505,772; 10,889; 21.5; 396; 92; 147; —. Leeds, 409,472; 8,128; 19.8; 163; 79; 66; —. Sheffield, 351,848; 7,438; 21.1; 193; 110; 44; —. Dublin, 349,594; 10,100; 28.9; 474; 204; 129; 1,147. Edinburgh, 292,364; 6,206; 21.2; 323; 34; 83; 565. Belfast, 281,431; 7,230; 25.7; 124; 375; 38; 995. Nottingham, 232,934; 4,363; 18.7; 48; 49; 21; —. Bristol, 232,242; 3,984; 17.2; 57; 47; 35; —. Bradford, 231,260; 4,022; 17.4; 81; 31; 15; —. Hull, 225,045; 4,166; 18.5; 24; 56; 32; —. Newcastle, 217,555; 4,141; 19.0; 94; 34; 25; —. Salford, 213,190; 5,084; 23.8; 473; 65; 32; —. Leicester, 203,599; 3,587; 17.6; 14; 39; 73; —. Portsmouth, 182,585; 2,952; 16.2; 35; 43; 28; —. Cardiff, 170,063; 2,574; 15.1; 75; 21; 90; —. Brighton, 121,401; 1,823; 15.0; 17; 22; 11; —. Norwich, 110,154; 2,062; 18.7; 3; 32; 10; —. Plymouth, 97,658; 1,855; 19.0; 49; 8; 13; —. Amsterdam, 495,683; 7,532; 15.2; 12; 34; 142; —. Rotterdam, 288,863; 5,074; 17.6; 16; 37; 74; —. La Haye, 191,529; 3,021; 14.8; 1; 9; 32; —. Paris, 2,511,629; 46,704; 18.6; 823; 241; 297; 9,250. Lyon, 466,767; 8,762; 18.8; 30; 101; 65; 1,356; Bordeaux, 252,102; 5,183; 20.6; 21; 49; 23; 583. Lille, 216,276; 4,852; 22.4; 164; 8; 26; 755. Saint-Etienne, 135,784; 2,829; 20.8; 9; 35; 19; 339. Nantes, 125,757; 2,710; 21.5; 2; 29; 7; 480. Roubaix, 124,447; 2,456; 19.7; 71; 21; 23; 288. Le Havre, 119,470; 3,046; 25.5; —; 42; 17; 607. Rouen, 112,657; 3,199; 28.4; 15; 31; 26; 484. Reims, 108,943; 2,550; 23.4; 5; 18; 17; 328. Nice, 108,227; 2,077; 19.2; 29; 41; 14; 236. Berlin, 1,708,499; 29,796; 17.4; 300; 92; 537; 3896. Hamburg, 641,780; 11,056; 17.2; 5; 46; 112; 1,347. Munich, 418,000; 10,230; 24.5; 161; 23; 183; 1,321. Leipzig, 413,529; 8,104; 19.6; 46; 40; 119; 914. Breslau, 367,769; 9,411; 25.6; 29; 43; 99; 1,394. Dresden, 347,485; 7,082; 20.4; 18; 12; 114; 854. Cologne, 331,000; 7,025; 21.2; 14; 29; 150; 729. Frankfort, 244,889; 3,981; 16.3; 44; 13; 28; 692. Hanover, 220,644; 3,899; 17.7; 14; 11; 42; 389. Dusseldorf, 185,911; 3,765; 20.3; 20; 8; 72; 325. Nuremberg, 168,654; 3,798; 22.5; 110; 3; 39; 731.

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For the third quarter, 1897.—Marseilles, 447,344; 2,609; 23.3; 8; 155; 9; 174. Cairo, 353,188; 4,891; 55.2; 64; 71; 65; 271. Alexandria, 181,703; 2,850; 62.8; 19; 22; 17; 218. Damiette, 43,502; 183; 16.8; —; —; —; 12. Suez, 12,406; 187; 60.3; —; 5; —; 2. Port Said, 10,693; 215; 80.4; —; 4; 2; 5.

For the fourth quarter, 1897.—Bordeaux, 252,102; 1,404; 22.3; 6; 8; 4; 149. Rouen, 112,657; 738; 26.2; —; 11; 9; 123. Nice, 108,227; 468; 17.3; —; 13; 5; 60. Bologne, 149,898; 791; 21.1; —; 15; 6; 71. Madrid, 487,169; 3,556; 29.2; 41; 58; 38; 514.

Deaths from smallpox abroad in 1897: Glasgow, 8; in all other cities of Great Britain and Ireland, 7; Paris, 11; in other French cities, 5; Rotterdam, 1. In Germany (Dresden), 1; Trieste, 11; Buda-Pesth, 1; St. Petersburg, 119; Moscow, 33; Warsaw, 268; Odessa, 118; Madrid, 176; Bucharest, 83.

BOOK REVIEWS.

AIR, FOOD AND EXERCISE: An Essay on the Predisposing Causes of Disease. By A. Rabagliati, M. A., M. D., F. R. C. S., Edin., Honorary Gynæcologist, and late Senior Honorary Surgeon Bradford Royal Infirmary; Consulting Medical Officer Bradford Children's Hospital. Second edition. 12mo, pp. 236. New York: Wm. Wood & Co.

The second edition of this book in the short space of two months may be accepted as evidence of its value, or at least of its appreciation by persons interested in the subject—and who is not? That the book has met with such favor is surely not because the subject is a new one, but it may be because of the singular and trenchant way of discussing it. "Air, Food and Exercise: An Essay on the Predisposing Causes of Disease," is an equivalent altogether at variance with common experience. Air, food and exercise, pure and sufficient, are the essential conditions of health, "while," as the author says, "improper relations between the human organism and air, food and exercise result in disease." But this, too, is a little awkward, if not, indeed, like the other, putting the cart before the horse. What are the improper relations, and to what? But a book which would not set us thinking would not be worth reading; and this one is a spur. It suggests much needed reflection on some old questions too generally believed to be settled, such as the heredity of cancer and some other diseases; and some new suggestions on the relation of food to certain acute diseases which others have overlooked. The author takes it for granted that any person of sense knows that pure air, pure food and well-regulated exercise are necessary conditions for the maintenance of health. Hence he proceeds to discuss disease as a common consequence of unregulated conditions, which he believes accounts for much disease that may be otherwise avoided. Cancer is discussed at greater length than any other disease, because perhaps it is more generally regarded as hereditary than any other, and is therefore the hardest to reconcile with the author's contention that it is frequently, if not always, an acquired disease. But still more certainly asthma, bronchitis and other throat affections, and rheumatism. The author thinks the evidence conclusive that these diseases and pneumonia are chiefly due to the accumulation of waste matters in the blood consequent upon an excess in the diet of starchy and saccharine foods; and he adduces statistics which show that the people who suffer most from these diseases are

those who live to a great extent upon such foods as bread, potatoes, rice, sugar, sago and tapioca puddings, and jam. He is not unmindful of the common fallacy that such diseases are the result of "taking cold," or "taking a chill," which he exposes. Altogether what the author alleges, and to a considerable extent verifies by statistics, regarding the causative relations of food to disease, is well calculated to arrest the attention of physiological chemists and pathologists to a fruitful field which has been too little cultivated. It is an eminently thoughtful book, evidently the result of diligent observation and study, and well calculated to promote human health.

MANUEL DE GENIE SANITAIRE, par M. Barré, ingénieur, professeur à l'Association polytechnique. Préface par L. Masson, inspecteur des travaux Sanitaires de Paris. 2 vol. in 16. de 350 pages avec 100 figures. 4 fr.

A Manual of Sanitary Engineering by M. Barré, professor at the Polytechnic Association. Preface by L. Masson, sanitary inspector in Paris. 2 volumes in 16mo, of 350 pages and 100 illustrations. I. The healthy city. II. The healthy house. 4 francs.

M. Barré has given in his "Manual of Sanitary Engineering," a synopsis of everything necessary or useful to be known regarding that branch of sanitary knowledge. The first volume is devoted to the "Healthy City." A second treats of the "Healthy House." These two volumes contain a vast amount of valuable matter, greatly condensed, some of which might be looked for in vain elsewhere.

In the "Healthy City" he studies the general principles of civic hygiene; then the means of preserving the condition of the soil and the air. An important chapter on water supply is followed by an account of the water supply in Paris and the best means of utilizing the sewage.

An account of the unhealthful establishments found in most communities is followed by a description of the dangers of cemeteries; cremation is alluded to, and the first volume ends with an account of the principal systems of sanitation employed in the large cities of France and of foreign countries. A complete comparative table of the sanitary condition and of the mortality in different countries. This enables the reader to form a correct idea of the manner of treating sanitary questions under the variable conditions found in different climates. The text is accompanied with illustrations which give it great clearness.

In the "Healthy House" are presented the conditions most conducive to the health of the inmates; proper means for filtering water, for the removal of refuse and sewage.

The "Ideal House" represents perfect baths, laundries, heating, lighting and ventilation; unhealthful sleeping-rooms.

Only the most recent documents and the best authorities have been consulted in the preparation of the work.

This "Manual of Sanitary Engineering" is destined to render great service by popularizing correct opinions regarding civic and domestic hygiene.

SAJOUS' ANNUAL AND ANALYTICAL CYCLOPAEDIA OF PRACTICAL MEDICINE. Vol. I.: Abdominal Injuries to Bright's Disease. Pp. 670. Philadelphia: The F. A. Davis Co.

This excellent and singularly comprehensive work is alike progressive in style and substance. It now appears in royal octavo, two columns to the page, with colored plates and numerous engravings illustrating the text. Regarding this change of form and other improvements the publishers invite attention to some misunderstanding of the terms to subscribers. Subscriptions are taken for the entire series only, at $5 per volume, in cloth. This secures a large six-volume reference system with thirty-six monthly supplements during that period.

The volumes will be beautifully illustrated; each volume will be handsomely bound in two colors of cloth. The half-Russia binding will be furnisher at $6 per volume, if desired.

The new publication has the alphabetical arrangement, and comprises a concise statement of the generally accepted methods in vogue, in one style of type, while in a different type, on the same page, can be found the opinions of well-known authorities bearing upon whatever may be debatable regarding the subject in hand. This alphabetical arrangement will consider all the practical subjects of medicine and surgery and the clinical application of therapeutics. It will appear at the approximate rate of one volume each six months, the whole alphabet being thus covered in three years, and during this time a monthly supplement (The Monthly Cyclopædia), alphabetical from A to Z, will be brought out; so that a doctor can have a complete synopsis of the latest journal literature to reinforce his system of reference.

As a thoroughly complete book of reference to progressive medical literature it is unapproachable by any other publication in the English language.

CONTEMPORARY LITERATURE.

KIN TO GREAT BRITAIN.

It is true that in a sense the United States is neither a Christian nor an Anglo-Saxon nation. It is not officially Christian, if thereby is meant a nation which gives political or financial advantage to one religion over another. It is not Anglo-Saxon, if thereby is meant a nation which sets itself to confer political power upon one race over another. But though it is officially neither Christian nor Anglo-Saxon, it is practically both. Its ethical standards are not those of Mohammedanism, or Confucianism, but those of Christianity. Its ruling force in the country, educational, political, and on the whole commercial, is not Celtic, nor Sclavic, nor Semitic, nor African, nor Mongolian, but Anglo-Saxon. Thus in its religious spirit, though not altogether in its religious institutions, in its practical leadership, though not in the constituent elements of its population, and in its national history and the genesis of its political institutions, the United States is of kin to Great Britain. The two represent the same political ideals; they are both democratic; they both represent the same ethical ideals; they are Christian; and they both represent the same race leadership; they are Anglo-Saxon. In so far as their conjoint influence dominates the world it will carry with it a tendency toward liberty in the political institutions organized, a tendency toward Christianity in the ethical spirit of the society created, and a tendency toward that energy, that intelligence, and that thrift which are the characteristics of the Anglo-Saxon race in the life promoted.—From "The Basis of an Anglo-American Understanding," by the Rev. Lyman Abbott, D. D., in North American Review for May.

A CHANCE FOR THE MEDICINE MAN.

Let us hope that Commodore Dewey will withhold his consent absolutely from the use of his portrait for advertising patent medicines. He hails from Vermont, as we have all recently learned, and Vermont of course is proud of him. But she is sensitive about the use of her great men's pictures by advertisers. The portrait of her Governor, Josiah Grout, has lately figured in the

newspapers in connection with a patent medicine, and there is reason to believe (as lately set forth in the Evening Post) that Vermont has not liked it. Of course it would be worth a good deal to a patent medicine man to print Commodore Dewey's portrait with the statement, "I took your pills at Manila," or, "Admiral Montojo was much helped by the use of your nerve remedy after our fight." But that would not do; Vermont would not like it.

Vermont, by the way, is cutting a considerable figure in this war. If one man contributed more than any other to bring it on it was her Senator Proctor, who went to Cuba and made a report. At this writing the man who has struck the hardest blow in it is her Commodore Dewey.—Harper's Weekly.

A SCIENCE FOR MOTHERS.

Seven years ago I began to observe a child systematically, trying to keep constantly in view the fact that he was but one of many, and taking no liberty of expression whatever beyond recording facts. The child referred to was trained under what might be called the Pestalozzian principle of letting alone with unconscious supervision, in a carefully guarded environment which supplied a great number of centres of interest that were full of indirect suggestion. No formal teaching of any kind was allowed until the end of the sixth year, but all questions were carefully answered, and effort was made to see that the answers were clearly understood Servants were instructed to refer him to his parents for answers to all questions they did not themselves comprehend, and sufficient supervision was given to see that these directions were followed. All baby talk was forbidden, and great care was taken to enunciate distinctly. Surroundings were carefully planned to meet the growing needs of the child from the moment he began to notice things. The record is therefore one of spontaneous development of self-activity, produced as a result (1) of suggestion based upon a carefully considered environment, (2) of accurate and sympathetic explanation given only when asked for, and (3) of carefully graded steps that were taken one at a time. Self-restraint upon the part of the parent or teacher is a necessity when developing children, in order to prevent giving more information than the child can absorb.—From "A Study of a Child," by Louise E. Hogan, in Harper's Magazine for June.

PAGAN CEREMONIALS AMONG THE PUEBLOS.

Fernand Lungren, the artist, contributes to the May Century an article entitled "Notes on Old Mesa Life." This is supplemental to an account by F. W. Hodge, of the Ethnological Bureau, of his "Ascent of the Enchanted Mesa." Mr. Lungren says:

"The yearly celebration of the dance and fiesta of San Estevan at Acoma, while owning a Christian saint's name, has nothing Christian about it; it is absolutely pagan. It is a savage celebration of an event widely distributed among all peoples, in all times, being, in fact, a "harvest home," or thanksgiving primarily, with growths accruing from environment and natural causes. In nearly all of the Rio Grande pueblos the principal pagan ceremonial was given the name of that saint in the calendar whose day fell the nearest to the beginning of the celebration."

WHAT HYPNOTISM REALLY IS.

Whatever explanation of hypnotism we feel inclined to adopt, it is evident that, as a matter of science, this condition cannot be separated from the analogous states to which I have referred. Things cease to be wonderful when you can find parallels for them, and when we see in hypnotism merely a further expression of the brain byway which has led us through sleep and dreams to sleep-walking, we have allocated it to its true position in the series of mental phenomena whereof it forms part. Hypnotism, indeed, has been well styled "artificially induced somnambulism"; for the phenomena of the one state are analogous to those of the other, and the actions performed by the sleep-walker run parallel to those we can induce at will in the mesmeric subject. That which we do effect in hypnotism is essentially the inhibition of the upper brain. We switch off the cerebrum temporarily from its command of the body, and allow the central ganglia, under the influence of suggestion, to come to the front in the mental life of the individual. Any rational theory of mesmerism must take such facts into account. On this basis alone is hypnotism to be scientifically explained. Rejecting some such view of its causation, hypnotism cannot be explained at all; and in the latter case it will pass inevitably into the domain of the quack, who, with his high-sounding jargon, mystifies the ignorant and adds another and very considerable portion to the already lofty edifice of human folly and cred-

ulity.—From "Some Byways of the Brain," by Andrew Wilson, M. D., in Harper's Magazine for May.

HEREDITY AND INDIVIDUAL RESPONSIBILITY.

It is always asked how one can account for those cases of criminals who beget a frightful array of criminals, examples of which are quoted in most works on heredity. The fact is that they are not only begotten in sin, but that they are nurtured and brought up in it. Ah! but you reply, how about those who are adopted by righteous and well-to-do people, as not infrequently occurs, and, in spite of those surroundings and a good education, return to the old ways of sin and deceit? How about the cases of inheritance of morbid tastes? These questions bring us to the most important part of the whole subject—that of individual responsibility in relation to a sinister inheritance. I believe, in view of the great possibilities of cultivation of the human powers, that such an inheritance can be overcome, provided the will of the individual is sufficiently aroused. It is necessary that the person become fully aware of the tendencies, and that a sufficiently strong desire be aroused to overcome them. The animal, without the highest development of the reasoning powers, without the higher faculites of the will and the intellect and a spiritual nature, could not throw off heredity, which really becomes to him his guiding power; but the individual endowed with conscience, will, a knowledge of himself and what he owes to himself and others, can make his inheritance his kingdom or can reject it. The child of drunken parents, through the intense disgust at the spectacle that they present of lack of self-control and improvidence, has no temptation to yield to such inherited taste.

The key of the situation is to know one's inherited tendencies. The mind, the faculties, and these tendencies are like a field for cultivation. The weeds can be uprooted; the tender plants of genius, ability, and virtue can be cultivated and made to thrive.—Grace Peckham Murray, M. D., in Harper's Bazar.

THE TIMES.

In history-making times like these a truthful record of passing events becomes an imperative need. The daily newspaper is ephemeral and not easily preserved for reference. The American Monthly Review of Reviews has all the value of the newspaper,

besides distinctive merits of its own. As an epitome of current history it is complete, compact, terse, impartial, absolutely reliable, and judiciously edited. As a piece of journalistic history writing what could be more brilliant or fascinating than the May number of this publication, with its story of the Spanish-American war crisis? Merely as a souvenir of this past eventful month the Review has a certain unique fitness. The diplomatic, financial, political, and military phases of the Cuban situation are exhaustively reviewed in the illustrated "Progress of the World" and "Record of Current Events" down to the outbreak of hostilities between the United States and Spain, while "The War Question in Cartoons" and "Leading Articles of the Month" throw important side-lights on the discussion.

In Appleton's Popular Science Monthly for June Felix L. Oswald, the naturalist, will have a short study of the curious tendency known as Atavism, which oftentimes leads to such surprising results in the human family. In supporting his contention a number of notable historical instances of this form of reversion to ancestral types are cited and explained.

CONFERENCES OF STATE AND PROVINCIAL BOARDS OF HEALTH OF NORTH AMERICA.

The thirteenth annual meeting of the Conference of State and Provincial Boards of Health of North America will be held in Detroit, Michigan, August 9, 10 and 11, 1898.

The "quarter centennial celebration of the establishment of the Michigan State Board of Health" will be in progress at the above-named time. This will undoubtedly add greatly in every way to the success and profit of the Conference.

The usual Conference work will begin on the morning of August 10. Headquarters will be at the Cadillac Hotel.

After the meeting it is expected that the sanitarians from outside of Michigan will be given free transportation to various summer resorts. Therefore it is hoped that all will come prepared to spend at least a week in Michigan.

Indianapolis, April 25, 1898. J. N. HURTY, M. D., Sec.

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